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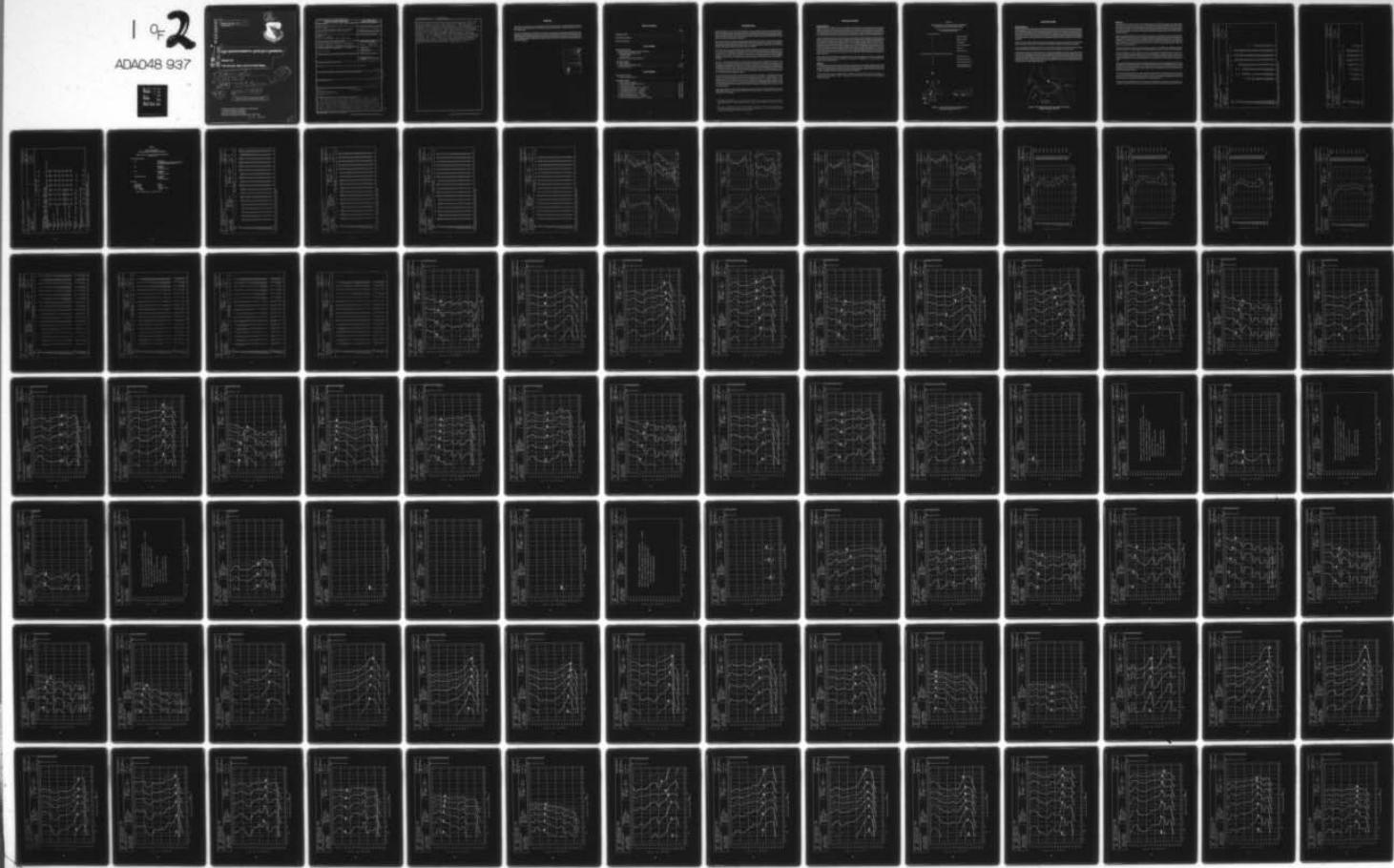
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USAF BIOENVIRONMENTAL NOISE DATA HANDBOOK. VOLUME 97. T-39 AIRC--ETC(U)
MAY 77 R G POWELL, N A FARINACCI

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Volume 97



USAF BIOENVIRONMENTAL NOISE DATA HANDBOOK.

Volume 97.

T-39 Aircraft, Near and Far-Field Noise

9 Technical rept.

10 Robert G. / Powell

Nick A. / Farinacci

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→ preferred speech interference level, perceived noise level, and limiting times for total daily exposure of personnel with and without standard Air Force ear protectors. Far-field data measured at 19 locations are normalized to standard meteorological conditions and extrapolated from 75-8000 meters to derive sets of equal-value contours for these same seven acoustic measures as functions of angle and distances from the source. Refer to Volume 1 of this handbook, "USAF Bioenvironmental Noise Data Handbook, Vol 1: Organization, Content and Application," AMRL-TR-75-50(1) 1975, for discussion of the objective and design of the handbook, the types of data presented, measurement procedures, instrumentation, data processing, definitions of quantities, symbols, equations, applications, limitations, etc.

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PREFACE

This report was prepared by the Biodynamic Environment Branch, Aerospace Medical Research Laboratory, under Project/Task 723104, Measurement and Prediction of Noise Environments of Air Force Operations.

The authors gratefully acknowledge Mr. John Cole for his assistance in preparing this report, Mr. Jerry Speakman and Mr. Robert Lee for their assistance in acquiring the raw data, Mr. Keith Kettler, Mr. Henry Mohlman and Mr. David Eilerman of the University of Dayton for assistance in the mechanics of data processing, and Mrs. Peggy Massie and Mr. Mike Patterson for assistance in typing and preparation of the graphics.

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INTRODUCTION

The USAF T-39A, B, and F are pilot proficiency trainer aircraft each of which are powered by two J60-P-3A turbojet engines. Since these aircraft are externally identical and have the same engines, their near and far-field noise characteristics are the same. These aircraft were manufactured by the Los Angeles Division of North American Rockwell and the engines by the Pratt and Whitney Aircraft Division of United Technologies Corporation.

This volume provides measured and extrapolated data defining bioacoustic environments produced by this aircraft during ground runup operations. Such data are essential to evaluate ear protection requirements, limiting personnel exposure times, voice communication capabilities, and annoyance problems associated with ground runups of the T-39 aircraft.

This volume is one of a series published by the AMRL under the same report number (AMRL-TR-75-50) as a multi-volume handbook that quantifies the noise environments produced at flight/ground crew locations and in surrounding communities by operations of Air Force aircraft and ground support equipment. The far-field, community-type, noise data in the handbook describe the noise produced during *ground operations* of aircraft, ground support equipment, and other ground-based equipment or facilities.

Volume 1 of this handbook discusses the objectives and design of the handbook, the types of data presented, measurement procedures, instrumentation, data processing, definitions of quantities, symbols, equations, applications, limitations, etc. Volume 2 provides a method and data for adjusting the handbook's far-field noise data, which are for standard meteorological conditions (15 C temperature, 70% relative humidity, 0.760 meter Hg barometric pressure), to derive comparable data for other meteorological conditions. Refer to Volumes 1 and 2 (references 1 and 2) for such information because it is not repeated in other handbook volumes.

A cumulative index lists those aerospace systems contained in the handbook, and identifies the specific volumes containing each type of environmental noise data available (i.e., inflight/flight crew and passenger noise, near-field/ground crew noise, far-field/community noise). Volume numbers are assigned sequentially as individual volumes are published. This index is periodically updated as individual volumes are published and is available upon request from AMRL/BBE, Wright-Patterson AFB, OH 45433. Organizations on the distribution list for the handbook will automatically receive a copy of each updated index.

Direct any questions concerning the technical data in this report and other handbook volumes to: AMRL/BBE, Wright-Patterson AFB, OH 45433; AUTOVON 78-53675 or 78-53664; Commercial (513) 255-3675 or (513) 255-3664.

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1. Cole, John N., *USAF Bioenvironmental Noise Data Handbook, Volume 1: Organization, Content and Application*, AMRL-TR-75-50 (1) Aerospace Medical Research Laboratory, Wright-Patterson Air Force Base, Ohio, 1975.
 2. Cole, John N., *USAF Bioenvironmental Noise Data Handbook, Volume 2: Procedure to Evaluate Effects of Non-standard Meteorological Conditions on Far-Field Noise*, AMRL-TR-75-50 (2), Aerospace Medical Research Laboratory, Wright-Patterson Air Force Base, Ohio, 1975.

NEAR-FIELD NOISE

MEASUREMENTS

AMRL acquired near-field noise data on a T-39B aircraft during ground runup operations of its turbojet engines. For these tests the aircraft was located on a runup area at Langley AFB with no significant reflecting surfaces in the vicinity except the ground plane. Table 1 gives the engines' power conditions and nomenclature for ground crew locations. The ground-crew chief selected power conditions and near-field locations usually used during routine maintenance or engine runup for preflight checks.

At each near-field location a test engineer randomly moved a hand-held microphone in and around each location, probing all areas where a crew member's head would normally be located. He recorded all the noise samples on magnetic tape. During analysis of each sample, he determined the one-third octave band root-mean-square sound pressure using a 4- or 8-second integration time to derive a power-averaged level for each location. Figure 1 shows the six near-field locations where ground crew are usually located for maintenance and/or preflight checkout operations. Estimates of noise levels at other locations are difficult in the near-field since the noise source is spatially distributed, i.e., not a point source. The noise levels at near-field locations can vary widely depending upon relative distances from each noise source (intake noise, exhaust noise, panel resonances, internal engine noise through the engine wall, etc.).

Table 1 lists the numeric/alphabetic designators used on the data pages in this report to identify the measurement locations and test conditions. For example, the designator 1/A means ground crew location 1 and test condition A.

RESULTS

The measured data presented in Table 2 define the sound pressure levels (SPL) produced by the T-39B aircraft at the 6 ground crew locations. This table includes the overall, 1/3 octave band and octave band levels. From these data one can calculate the variety of measures given in Table 3, which are widely used to assess the effects of noise on personnel and their performance.

All near-field data are for the meteorological conditions at the time of the tests but are valid for all typical airbase meteorology (winds ≤ 5 meters per second) because of the short sound propagation distances involved.

TABLE 1

MEASUREMENT LOCATIONS AND TEST CONDITIONS
FOR NEAR-FIELD NOISE MEASUREMENTS

T-39B Aircraft, Ground Runup, Langley AFB
Tail #592873 27 March 1975

Ground Crew Location

1	Marshal, Right Side
2	Marshal, Left Side
3	MD-3 Operator
4	Power Cable Disconnect
5	Chock Pull
6	Marshal, Forward

Aircraft Engine and Ground Support Equipment Operation

A	Engines Off, MD-3 On
B	Engine #2 Idle, MD-3 On
C	Both Engines Idle, MD-3 On
D	Both 65% RPM, MD-3 On (Hydraulic Pressurization)

⑥

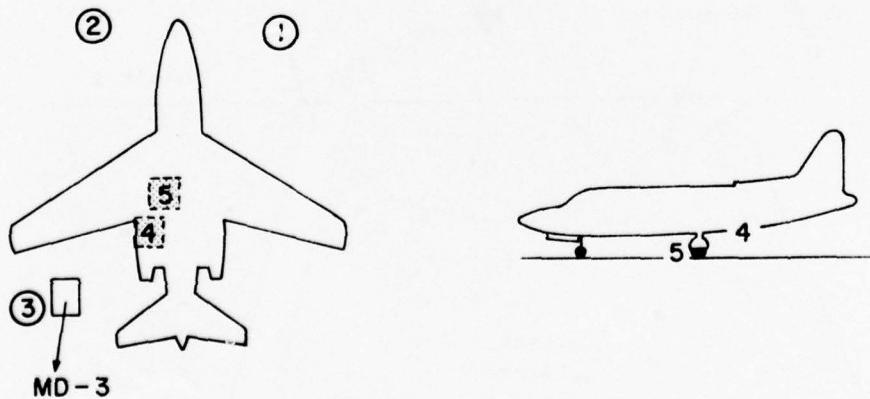


Figure 1. Near-Field Measurement Locations on
Runup Pad Langley AFB, VA

FAR-FIELD NOISE

MEASUREMENTS

AMRL acquired far-field noise data on a T-39A aircraft during a 1-hour test period, thus keeping similar meteorological conditions throughout the test. Figure 2 shows the ground runup area (taxiway), ground cover, aircraft orientation and 19 microphone measurement sites on the semicircle. The center of the 75 meter radius semicircle used in surveying the J60-P-3A engines was on the ground directly below the intersection of the aircraft's centerline and the plane passing through both engines' exhaust-nozzle exits. The ground runup area did not have a blast deflector, therefore, the jet exhaust was in a "free-flow" condition.

Table 4 provides cockpit readouts of engine characteristics for each power setting used in the far-field tests. Also listed in this table are the surface meteorological conditions during data acquisition.

All 19 microphone measurement sites are in the acoustic far-field of the source where the sound wave-fronts spherically diverge and the noise source may be regarded as a point source.

A portable microphone/tape-recorder system was used to sequentially record the noise at each far-field location. The microphone was attached to a hand-held pole, pointed at the source (0° angle of incidence) and vertically scanned from 0.5 to 3 meters for a period of 5-10 seconds during data acquisition at each microphone location. These samples were then time-integrated to derive a root-mean-square sound pressure level. Vertical scanning and time-integrating together reduce anomalies frequently present in data acquired by a fixed height microphone.

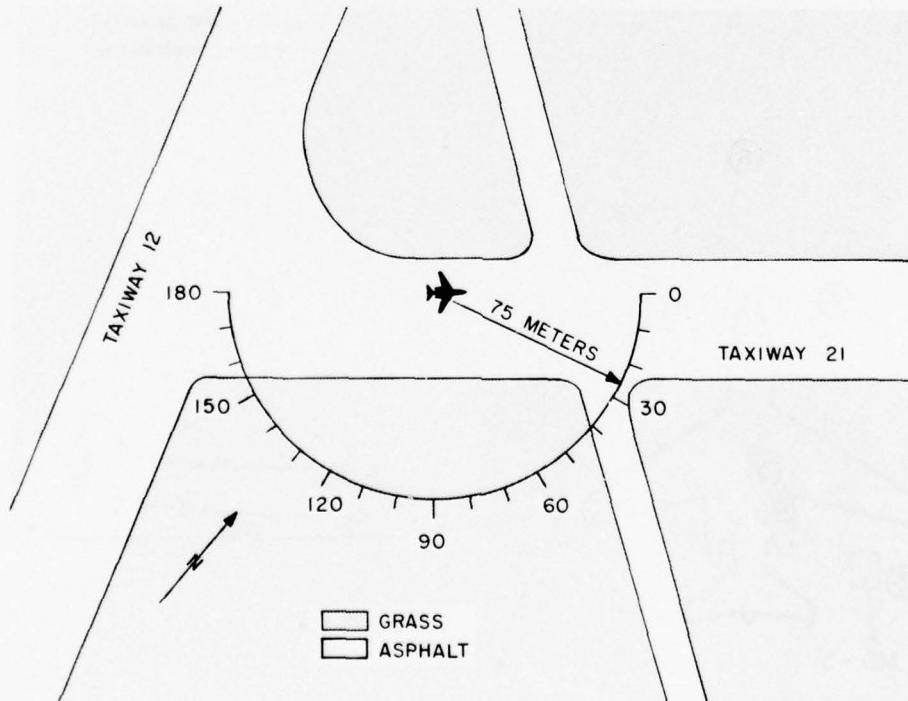


Figure 2. Far-Field Measurement Locations on Taxiway,
Wright-Patterson AFB, OH

RESULTS

Table 5 lists the overall and 1/3 octave band SPL measured at the far-field locations under meteorological conditions at the time of the test. Data in all other figures and tables are based on these levels. These data were normalized to 100 meters distance and standard meteorological conditions (15 C temperature, 70% relative humidity, 0.760 meter Hg barometric pressure) and used to derive the graphic data in Figure 3 which provides a compact summary of the far-field noise characteristics of the T-39A aircraft in a standard format.

Figure 4 and Table 6 present two basic acoustic measures, the acoustic power level and the directivity index, respectively. The acoustic power level describes the power radiated by the source as a function of frequency. The directivity index is a standard acoustical engineering measure that describes the geometric way in which the source radiates this power as a function of both frequency and angle from source. These basic source measures are primarily of interest for acoustical engineers and noise generation/ control specialists.

Estimates of the noise levels for intermediate power settings (e.g., 1.6 EPR) and/or different number of engines operating (e.g., single engine) can be determined as explained in Volume 1 of this handbook.

Figures 5 through 11 are sets of equal noise contours describing seven different measures of noise as a function of angle and distance from the source for standard day meteorology. They are respectively, overall sound pressure level, C-weighted sound level, A-weighted sound level, perceived noise level, speech interference level, permissible exposure time for personnel and octave band sound pressure levels.

Data excessively influenced by spurious background/electronic noise were eliminated from all figures and tables. No data are presented at the 170 degree locations for the 75% and 85% RPM runups nor at the 170/180 locations for the maximum power setting because of turbulent air flow behind the aircraft. Typically, the A-weighted levels for these angles are 10 to 20 dBA below the level measured at the preceding microphone location.

Test personnel performed noise surveys during quiet periods when the background noise was minimal, e.g., early in the morning when no other aircraft or engine test stands were operating. Data eliminated because they were near the background/electronic noise were generally not significant because the levels were so low (e.g., Table 5 and Figure 11, 31.5 Hz idle power).

Volume 2 of the handbook describes the influence of meteorology on far-field noise environments, and provides, if required, the factors necessary to adjust the handbook's standard meteorological day data.

TABLE I MEASURED SOUND PRESSURE LEVEL (DB)
2 1/3 OCTAVE BAND

NOISE SOURCE/SUBJECT: T-39B AIRCRAFT GROUND CREW NEAR FIELD NOISE LEVELS	OPERATION: C	LOCATION/CONDITION						IDENTIFICATION: OMEGA 3.2 TEST 75-005-002 RUN 01 17 APR 75 PAGE F1
		1/B	2/C	2/D	3/A	3/C	4/C	5/C
FREQ (HZ)								
25	80<	77<						
31.5								
40	86<	88<	95<	96<	98<	87	88	89
50						87<	91<	90<
63						96	99	99
80	90<	88<	90<	99	99	93<	95<	
100	91<	89<	89<	100	99	99	97	97<
125	93<	91<	100	99	99	100	100	96<
160	90<	89<	89<	99	99	99	99	98
200	87<	89<	89<	100	99	96	98	
250	86<	86<	91<	94<	95	102	93<	
315								
400	81<	87	91	90	92	101	102	
500	82<	86	93	90	91	97	93	
630	84	86	89	88	91	99	97	
800	91	90	90	90	92	102	100	83
1000	100	98	92	89	91	101	98	93
1250	89	90	93	91	93	101	95	87
1600	88	92	95	97	96	99	94	
2000	92	99	95	87	90	102	100	
2500	93	95	95	85	88	100	95	90
3150	97	99	110	88	91	104	97	91
4000	102	108	101	83	91	107	100	97
5000	102	104	100	79	89	104	99	93
6300	109	107	110	77	95	108	103	99
8000	106	106	105	74	96	108	102	98
10000	104	106	110	72	92	103	97	97
12500	105	105	108	68	90	101	94	97
16000	103	103	105	66	88	97	90	93
20000								
OVERALL	114	115	116	108	109	116	112	106

< LEVEL CORRECTED TO REMOVE BACKGROUND/ELECTRONIC NOISE.

TABLE : MEASURED SOUND PRESSURE LEVEL (DB)
2 OCTAVE BAND

NOISE SOURCE/SUBJECT :	OPERATION:						LOCATION/CONDITION
	1/B	2/C	2/D	3/A	3/C	5/C	
T-39B AIRCRAFT	97	94	99	92	94	94	
GROUND CREW	93	95	104	101	104	104	
NEAR FIELD NOISE LEVELS	103	108	101	101	104	102	
	100	99	96	97	104	104	
	95	100	95	94	96	105	103
	103	108	99	98	105	99	93
	111	111	91	95	109	102	98
	109	109	82	99	112	106	102
	109	112	74	95	106	99	100
OVERALL	114	115	116	108	109	116	112
							106

TABLE: MEASURES OF HUMAN NOISE EXPOSURE

3

IDENTIFICATION

OMEGA 3.2
TEST 75-005-002
RUN 01T-39B AIRCRAFT
GROUND CREW
NEAR FIELD NOISE LEVELS

OPERATION

17 APR 75
PAGE H1

LOCATION/CONDITION

1/B 2/C 2/D 3/A 3/C 4/C 5/C 6/C

HAZARD/PROTECTION	C-WEIGHTED OVERALL SOUND LEVEL (OASLC IN DB) AT EAR	A-WEIGHTED OVERALL SOUND LEVEL (OASLA IN DBA) AT EAR	MAXIMUM PERMISSIBLE TIME (T IN MINUTES) FOR ONE EXPOSURE PER DAY (AFR 161-35, JULY 73)	NO PROTECTION
OASLC	110	113	108	108
OASLA	112	113	102	104
T	PP	PP	21	PP
MINIMUM QPL EAR MUFFS	89	90	85	85
OASLA*	202	170	120	404
T				404
AMERICAN OPTICAL 1700 EAR MUFFS	87	87	89	91
OASLA*	285	285	202	807
T				807
V-51R EAR PLUGS	84	85	87	77
OASLA*	480	404	285	960
T				960
AMERICAN OPTICAL 1700 EAR MUFFS PLUS	74	75	76	64
OASLA*	960	960	960	960
T				960
H-133 GROUND COMMUNICATION UNIT	84	85	86	76
OASLA*	480	404	339	960
T				960
COMMUNICATION PREFERRED SPEECH INTERFERENCE LEVEL (PSIL IN DB)	93	96	97	95
PSIL				97
ANNOYANCE				105
PERCEIVED NOISE LEVEL, TONE CORRECTED (PNLT IN PNDB)				102
TONE CORRECTION (C IN DB)				
PNLT	127	129	132	120
C	3	3	4	3
				2
				1
				2
				3

* BASED ON CALCULATED SPL SPECTRUM UNDER PROTECTIVE DEVICE.
PP EAR PROTECTION REQUIRED TO AVOID HIGH FREQUENCY, WHOLE BODY EFFECTS.

TABLE 4

**TEST CONDITIONS
FOR FAR-FIELD NOISE MEASUREMENTS**

T-39A Aircraft, Ground Runups, Wright-Patterson AFB OH
1 August 1974

Aircraft Engine Operation

Idle	Both Engines 1.03 EPR, Engine Pressure Ratio (Calculated*) 30.05 Inches Hg, Engine Pressure, PT5
75%	Both Engines 1.25 EPR 36.5 Inches Hg, PT5
85%	Both Engines 1.46 EPR 42.5 Inches Hg, PT5
Takeoff Rated Thrust	Both Engines 1.93 EPR 56.5 Inches Hg, PT5

Meteorology

Temperature	27.8 C
Bar Pressure	0.742 M Hg
Rel Humidity	40 %
Wind — Speed	4.1 M/Sec (8 KTS)
— Direction	230 Deg

*EPR = Engine Pressure ÷ Ambient Pressure

TABLE I MEASURED SOUND PRESSURE LEVEL (DB)
1/3 OCTAVE BAND

MEASURED SOUND PRESSURE LEVEL (DB)												IDENTIFICATION:
1/3 OCTAVE BAND												OMEGA 1.4
DISTANCE = 75 METERS												TEST 75-002-048
NOISE SOURCE/SUBJECT:	OPERATION:	ANGLE (DEGREES)	METEOROLOGY:	RUN 01	RUN 02	RUN 03	RUN 04	RUN 05	RUN 06	RUN 07	RUN 08	RUN 09
T-39A AIRCRAFT J61-P-3/A ENGINE FAR FIELD NOISE	IDLE POWER 30.0 IN HG, PT-5 BOTH ENGINES FREE FLOW	0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180	TEMP = 28 C BAR PRESS = 742 HG REL HUMID = 40 %	25 AUG 76	PAGE 2							
25												
31.5												
40	59<	59<	60<	60<	62<	63<	63<	63<	63<	64<	64<	64<
50	61<	63<	62<	64<	60<	53<	55<	55<	55<	65<	67<	66<
63	64	65	71	65	68	67	66<	67<	68<	68<	68<	68<
80	68	70	74	68	70	73	72	70	70	70	70	70
100	69	69	71	70	65	67	70	66	68	72	74	71
12.5	66	67	67	68	63	59<	52	62	61	62	63	65
16.0	58	68	69	68	59	59	59	59	50	51	60	61
20.0	63	68	66	63	60	62	60	61	64	63	62	63
25.0	68	71	56	66	63	61	61	62	59	60	61	62
31.5	67	68	63	65	63	61	61	62	59	61	65	66
40.0	65	68	63	65	63	60	60	61	62	61	65	69
50.0	66	66	64	64	61	61	60	61	65	61	64	66
63.0	66	66	64	64	60	59	58	61	61	63	62	64
80.0	66	66	55	64	62	61	60	61	64	64	61	62
100.0	76	74	71	72	69	68	65	57	67	63	66	63
125.0	79	77	75	75	75	67	72	71	70	62	67	62
160.0	71	71	72	71	68	66	59	65	64	60	53	58
200.0	71	71	71	70	65	64	58	63	63	58	59	57
250.0	78	78	77	75	71	65	54	54	58	61	57	61
315.0	76	74	73	72	70	69	61	55	64	59	58	59
400.0	75	76	74	74	70	71	62	56	65	60	52	54
500.0	78	83	80	80	74	76	66	65	69	65	58	61
630.0	75	79	77	76	72	70	62	56	62	56	58	59
800.0	78	81	76	76	72	72	62	57	66	61	57	59
1000.0	72	71	70	69	67	58	51	59	63	58	53	57
OVERALL	87	88	85	86	92	83	77	91	80	79	78	79

< LEVEL CORRECTED TO REMOVE JACK GROUND/ELECTRONIC NOISE.

TABLE: MEASURED SOUND PRESSURE LEVEL (DB)
5 1/3 OCTAVE BAND
DISTANCE = 75 METERS

NOISE SOURCE/SUBJECT:	OPERATION:										METEOROLOGY:										IDENTIFICATION:						
	(75% RPM POWER			(36.5 IN AG, PT-5			(BOTH ENGINES			(FREE FLOW			TEMP = 28 C			BAR PRESS = 742 M HG			REL HUMID = 40 %			TEST 75-02-048					
	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180	RUN 02	PAGE 2						
FREQ (HZ)	25	50	75	100	125	150	175	200	225	250	275	300	325	350	375	400	425	450	475	500	525	550	575	600	625		
	65<	65<	61<	64<	65<	67<	66<	64<	65<	67<	68<	66<	65<	64<	65<	66<	67<	68<	69<	69<	68<	67<	66<	65<	64<	63<	
	67<	65<	65<	64<	65<	66<	67<	66<	67<	68<	69<	67<	66<	65<	66<	67<	68<	69<	70<	71	72	73	74	75	76	77	78
	70	70	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	73	73	73	73	73	73	73	73
	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71
	72	72	73	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72
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	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76
	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77
	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78
	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79
	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80
	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81
	82	82	82	82	82	82	82	82	82	82	82	82	82	82	82	82	82	82	82	82	82	82	82	82	82	82	82
	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83
	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84
	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85
	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86
	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87
	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88
	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89
	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90
	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91
	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92
	93	93	93	93	93	93	93	93	93	93	93	93	93	93	93	93	93	93	93	93	93	93	93	93	93	93	93
	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94
	OVERALL	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91

< LEVEL CORRECTED TO REMOVE BACKGROUND/ELECTRONIC NOISE.

TABLE I
MEASURED SOUND PRESSURE LEVEL (dB)
5
1/3 OCTAVE BAND
DISTANCE = 75 METERS

NOISE SOURCE/SUBJECT:	OPERATION:										METEOROLOGY:										IDENTIFICATION:			
	85% RPM POWER	42.5 IN HG, PT-5	IN HG, PT-5	TEMP = 28 C	BAR PRESS = .742 M Hg	REL HUMID = 40 %	TEST 75-002-048	RUN 13	OMEGA 1.4															
T-39A AIRCRAFT	J60-P-3/A ENGINE	FAR FIELD NOISE	BOOTH ENGINES	FREE FLOW																				
(Hz)	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180					
25	70<	71<	68<	65<	65<	66<	66<	68<	72<	58<	69<	68<	70<	73	74<	75<	79	74<	75<					
31.5	68<	65<	70<	65<	70<	68<	68<	68<	71<	74	71	73	75	78	80	75	76							
40	70<	67<	72	68<	72	70	70	72	78	74	77	77	78	83	84	77	79							
50	68<	68<	70	70	68<	69<	70	72	78	74	77	77	80	86	86	78	77							
63	71	73	72	74	71	71	74	75	60	77	79	81	84	96	90	89	76	75						
70	73	75	75	73	74	74	74	77	80	78	81	83	86	90	92	90	76	72						
100	75	76	77	80	75	76	76	76	79	81	79	81	84	87	92	95	92	77	73					
125	75	76	78	77	74	76	76	78	79	79	81	84	88	92	94	92	77	71						
160	77	80	79	80	76	75	75	79	81	82	84	84	88	93	95	93	81	76						
200	80	81	81	81	76	76	76	78	80	79	81	82	87	90	93	92	78	72						
250	81	82	81	81	81	76	76	76	79	79	81	82	87	90	92	94	78	73						
315	83	83	82	81	81	77	76	76	79	79	80	81	86	87	90	92	78	71						
400	82	84	81	82	77	76	76	76	79	79	79	81	84	89	90	95	75	68						
500	81	81	83	83	77	75	75	79	79	81	80	83	83	82	86	86	73	66						
630	83	79	81	81	77	76	76	76	81	79	81	82	82	82	82	84	72	65						
800	79	79	81	81	79	77	77	77	81	80	82	82	87	90	93	92	78	73						
1000	78	77	80	80	79	75	76	76	81	83	81	85	85	87	90	92	78	71						
1250	76	78	80	80	79	76	76	76	81	82	84	83	86	79	78	80	82	69						
1600	77	80	78	81	79	77	77	77	82	83	83	81	86	78	80	81	68	60						
2000	78	79	91	79	77	76	76	76	81	81	82	81	86	79	80	79	68	61						
2500	78	79	82	81	77	78	78	78	82	80	80	84	84	81	79	81	70	63						
3150	80	80	82	81	77	77	76	76	80	80	80	84	85	82	79	82	70	62						
4000	79	80	81	81	79	78	76	76	80	79	81	84	85	76	76	77	65	59						
5000	91	91	96	93	93	91	90	97	88	82	81	81	74	74	72	73	64	55						
6300	85	84	88	84	85	84	85	84	82	80	80	78	77	78	71	73	60	52						
8000	77	76	76	77	74	74	71	73	72	72	70	68	67	70	63	64	56	47						
10000	77	76	79	78	76	75	75	72	72	70	68	67	70	63	62	59	50	42						
OVERALL	95	95	98	96	95	94	93	94	94	94	94	94	97	97	100	103	102	89	86					

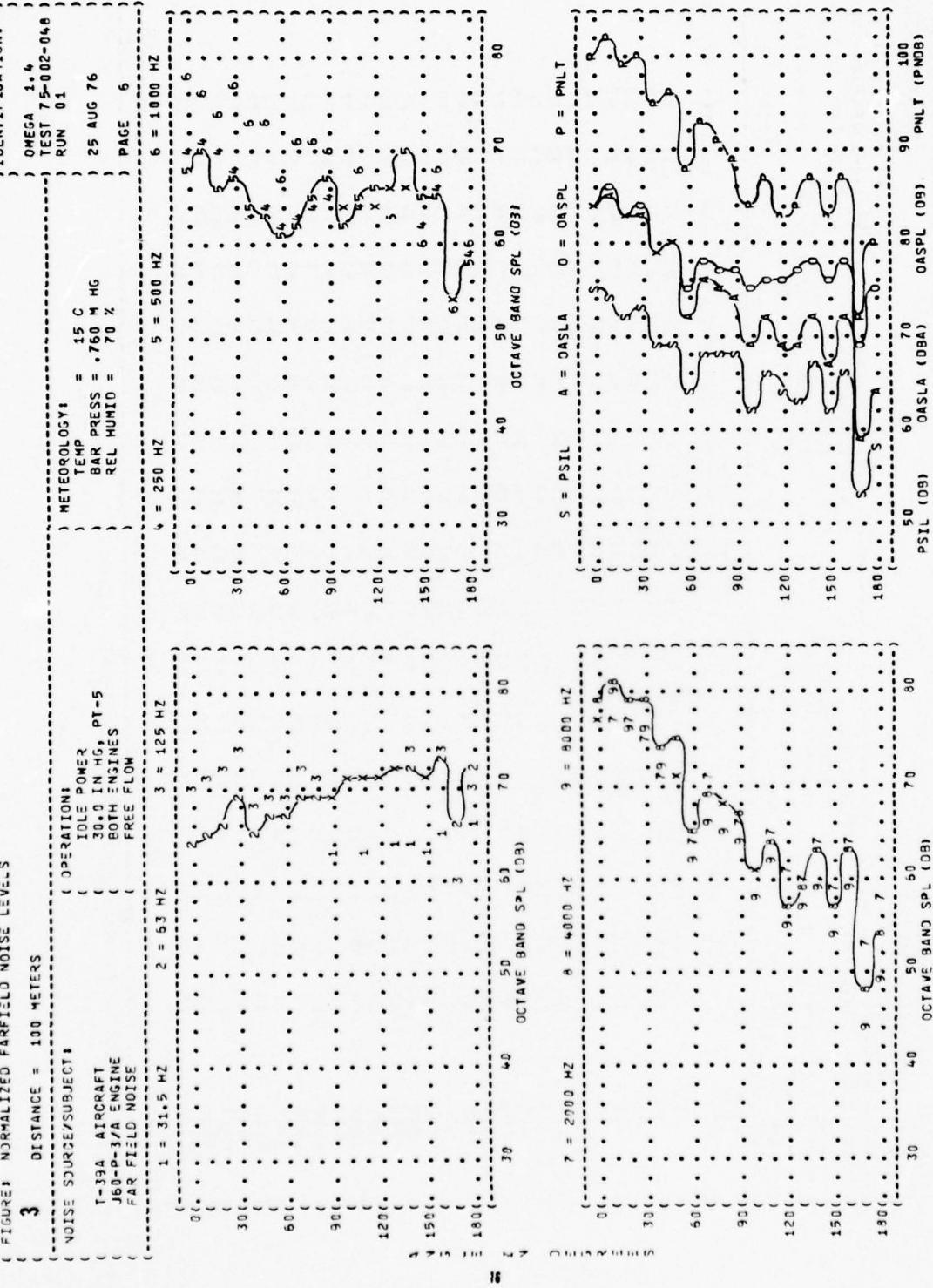
< LEVEL CORRECTED TO REMOVE BACKGROUND/ELECTRONIC NOISE.

TABLE 5
MEASURED SOUND PRESSURE LEVEL (DB)
1/3 OCTAVE BAND
DISTANCE = 75 METERS

NOISE SOURCE/SUBJECT:		OPERATION:										METEOROLOGY:									
		MAXIMUM POWER 26.5 IN HG, PT-5 BOTH ENGINES FREE FLOW					TEMP = 28 C BAR PRESS = 742 M HG REL HUMID = 40 %					TEST 75-002-048 RUN 04					OMEGA 1-4 25 AUG 76 PAGE 2				
FREQ (HZ)	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180		
25	72<	69<	59<	70<	70<	72<	74<	74<	72<	73<	74<	72<	74<	74<	74<	80	82	85	81		
31.5	73	69<	72	72	73	73	75	75	72	75	77	79	83	83	84	85	85	82	83		
40	74	74	74	75	73	75	77	77	78	80	75	79	83	88	88	88	88	88	83		
50	73	73	73	75	74	75	77	77	77	80	78	82	84	89	89	91	88	88	83		
63	77	77	78	78	77	78	78	78	79	81	81	93	97	91	92	94	91	80	80		
80	78	78	81	91	90	79	80	82	83	84	83	85	89	93	96	96	92	92	78		
100	81	81	95	83	81	83	84	85	85	85	85	88	90	95	98	98	92	92	79		
125	81	82	84	84	83	83	83	83	83	85	85	88	90	95	97	98	89	89	78		
160	85	85	87	85	83	83	83	83	83	85	84	86	89	93	97	99	97	89	78		
200	86	86	86	87	84	84	83	83	83	85	84	86	91	94	96	96	96	99	77		
250	89	90	99	88	84	83	83	83	83	84	83	85	89	95	96	96	95	96	80		
315	92	93	92	89	86	84	84	84	84	85	85	83	83	90	92	96	95	87	81		
400	92	92	92	91	89	86	85	85	86	87	86	84	84	92	95	93	95	90	84		
500	89	91	91	90	87	86	86	86	86	86	86	88	89	93	95	91	94	92	85		
630	97	92	89	88	87	87	87	88	88	89	91	91	91	94	97	91	93	90	83		
800	87	90	92	90	-	88	87	88	88	89	91	91	91	95	95	91	93	90	81		
1000	87	87	92	91	88	87	87	88	88	88	91	92	91	95	97	91	93	99	81		
1250	84	88	89	87	99	89	88	88	89	90	90	92	92	95	96	91	95	89	78		
1600	84	87	89	87	98	98	98	98	98	99	91	90	92	96	97	91	95	95	80		
2000	82	84	89	82	86	86	87	87	88	88	87	88	92	93	95	95	90	95	80		
2500	84	86	87	85	87	87	89	88	88	87	89	90	91	95	95	91	93	93	87		
3150	83	89	86	86	83	83	87	87	86	86	89	91	93	94	98	98	90	94	75		
4000	84	85	88	85	86	86	87	86	86	85	89	92	91	93	94	89	88	84	76		
5000	82	83	85	81	84	84	84	82	83	85	88	88	88	90	91	95	95	95	78		
6300	92	93	95	91	90	87	87	87	87	85	85	87	86	89	90	95	95	95	80		
8000	80	81	83	78	80	79	78	77	81	83	83	83	85	84	87	85	78	71	68		
10000	77	76	79	75	75	74	74	72	75	76	76	77	79	79	74	74	69	62	62		
OVERALL	100	102	103	101	99	99	99	99	99	99	99	99	99	99	99	102	102	102	94		

< LEVEL CORRECTED TO REMOVE BACKGROUND/ELECTRONIC NOISE.

FIGURE 3 NORMALIZED FARTFIELD NOISE LEVELS



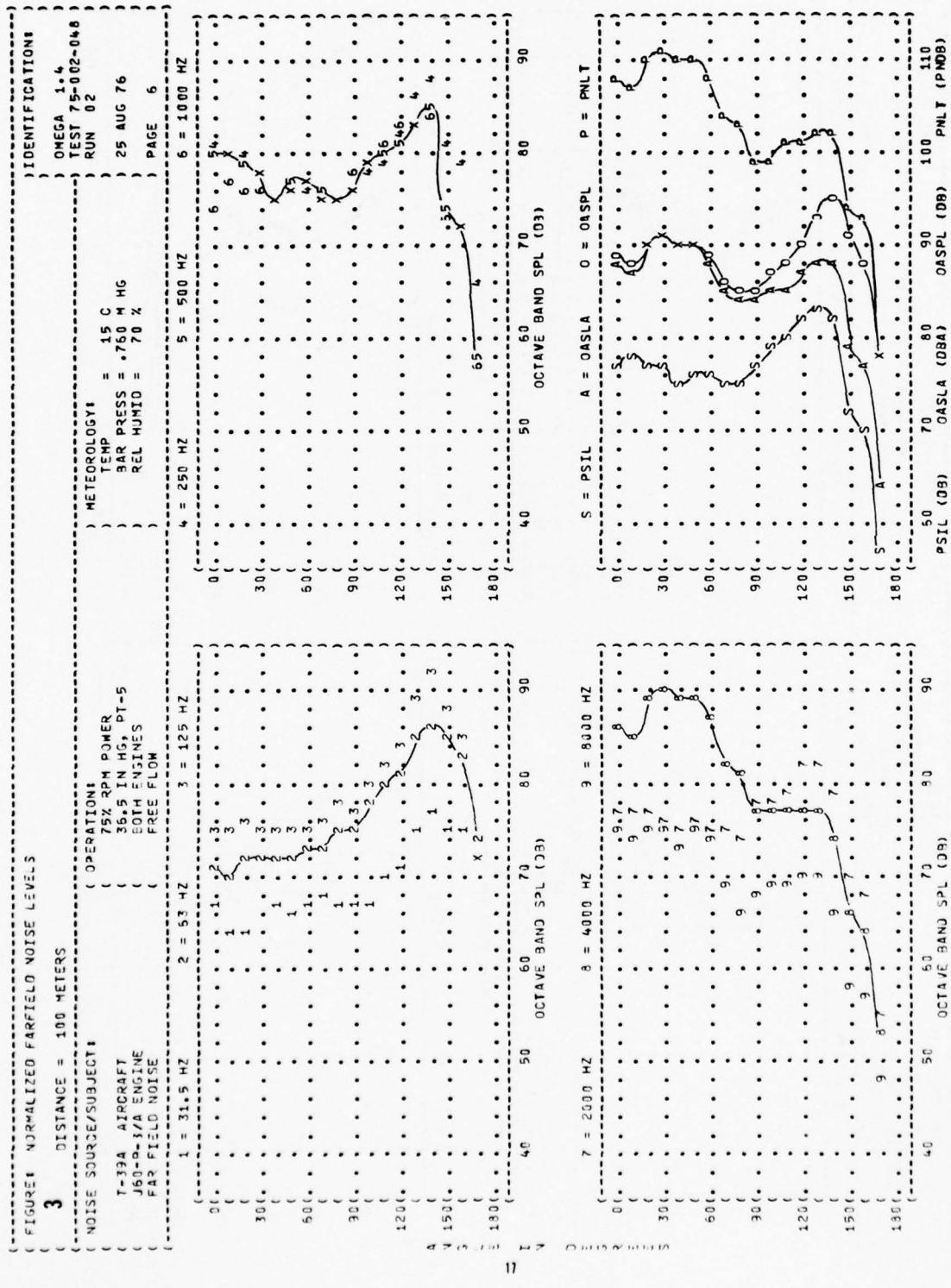


FIGURE 4 NORMALIZED FARFIELD NOISE LEVELS

3 DISTANCE = 100 METERS

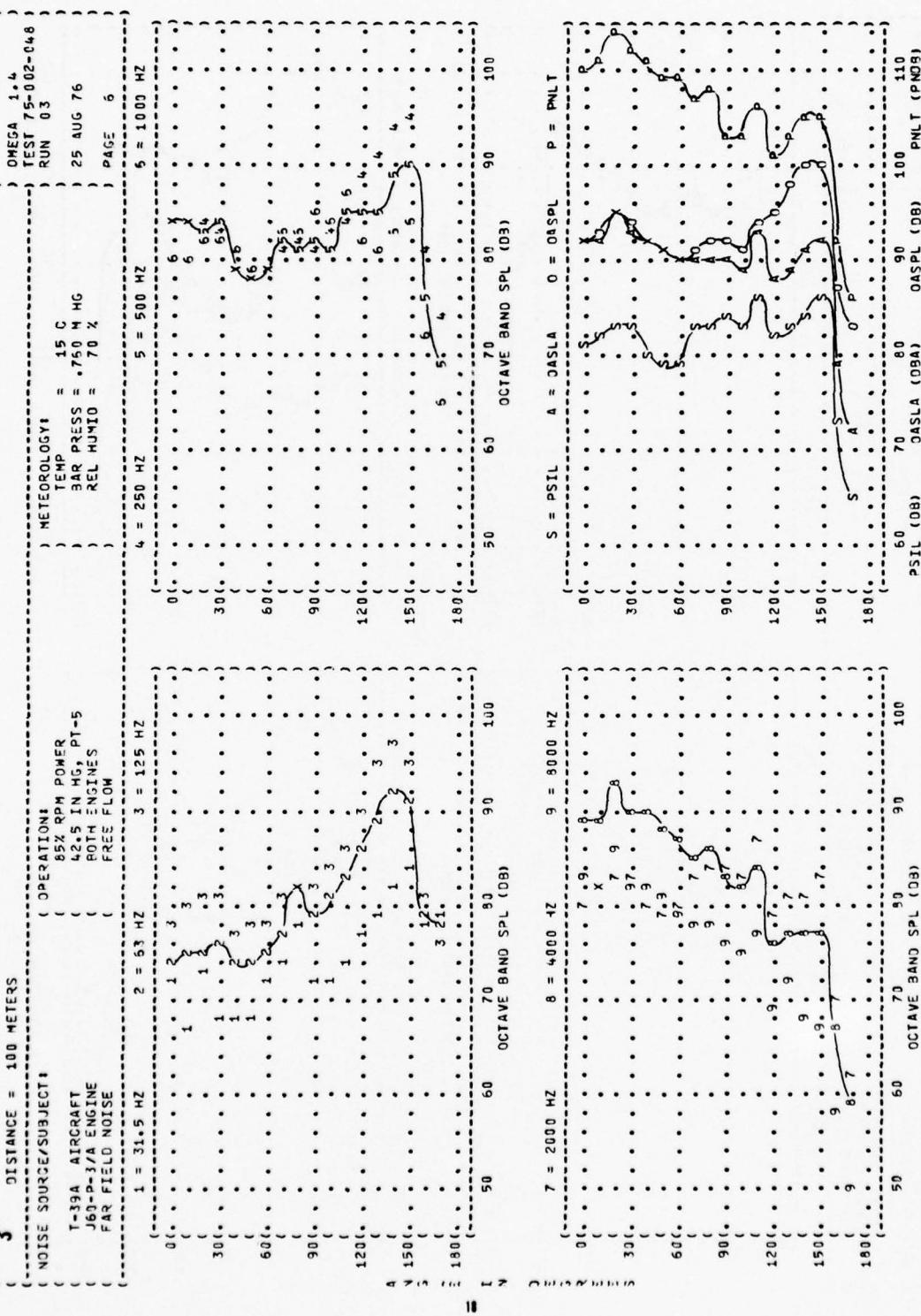


FIGURE 1 NORMALIZED FARFIELD NOISE LEVELS

3 DISTANCE = 100 METERS

NOISE SOURCE/SUBJECT:

T-33A AIRCRAFT
J60-P-3/A ENGINE
FAR FIELD NOISE

OPERATION:

MAXIMUM POWER
5b's IN HG, PT-5
BOTH ENGINES
FREE FLOW

METEOROLOGY:

TEMP = 15 C
BAR PRESS = .760 MG
REL HUMID = 70 %

IDENTIFICATION:

OMEGA 1.4
TEST 75-702-048
RUN 04
PAGE 6

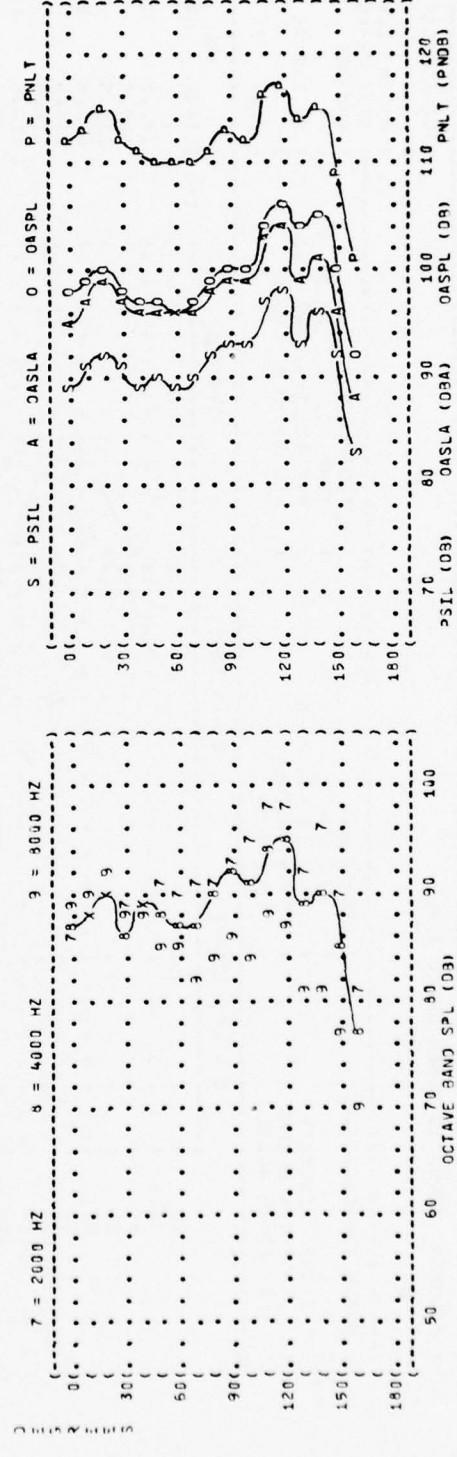
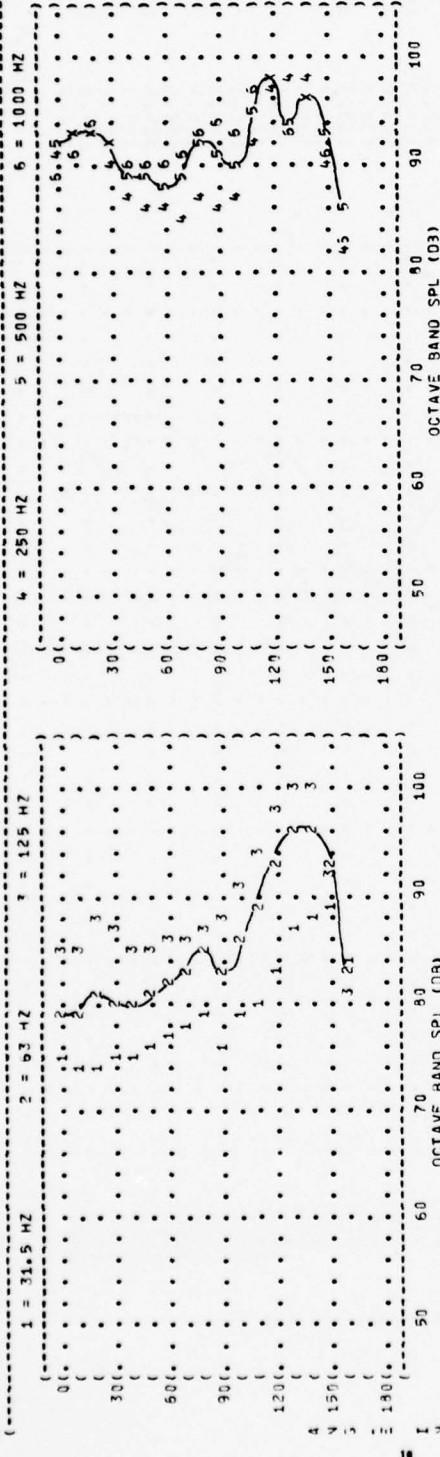


FIGURE 4 ACOUSTIC POWER LEVEL (PWL)

4

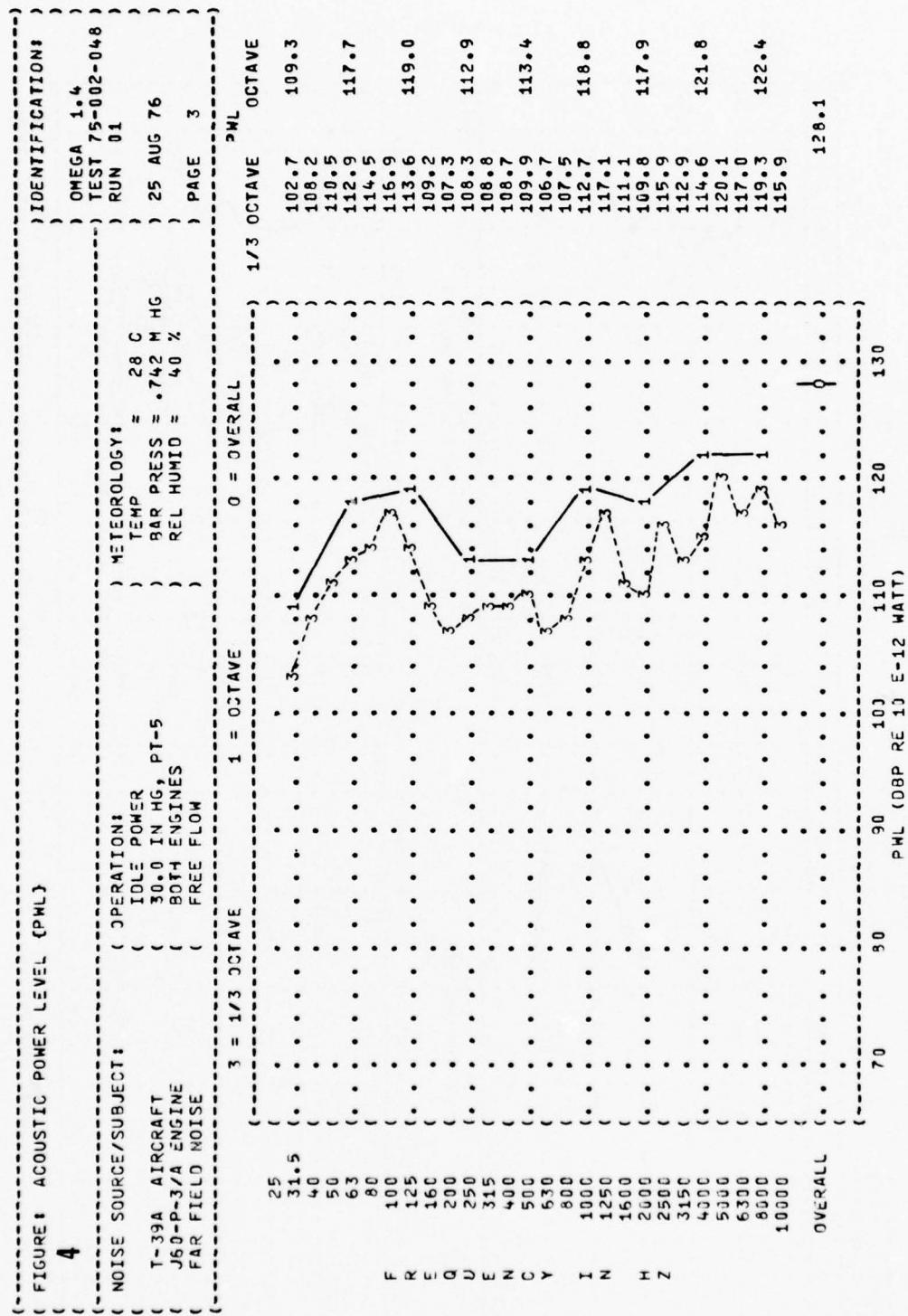


FIGURE : ACOUSTIC POWER LEVEL (PML)

4

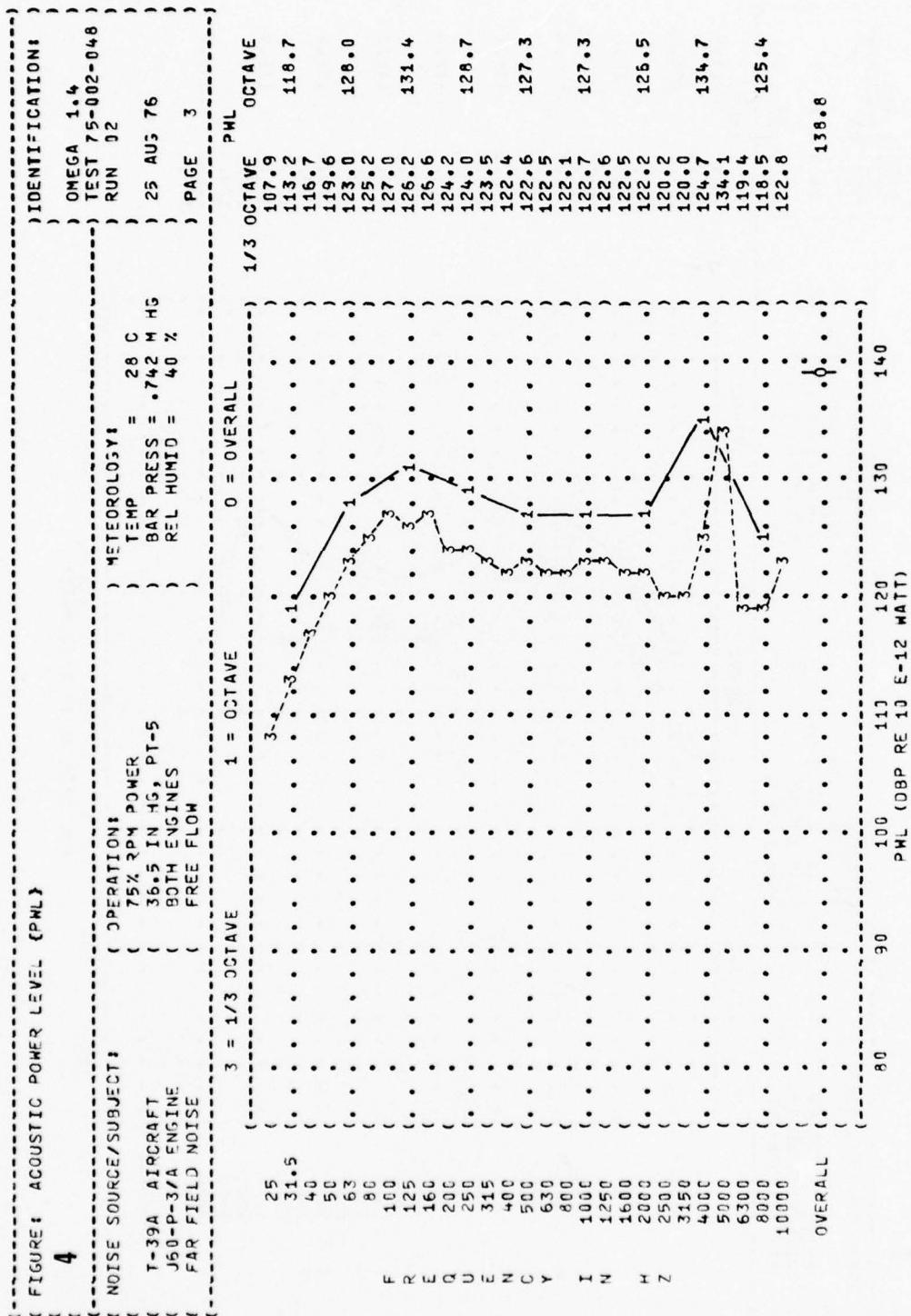


FIGURE 8: ACOUSTIC POWER LEVEL (PWL)

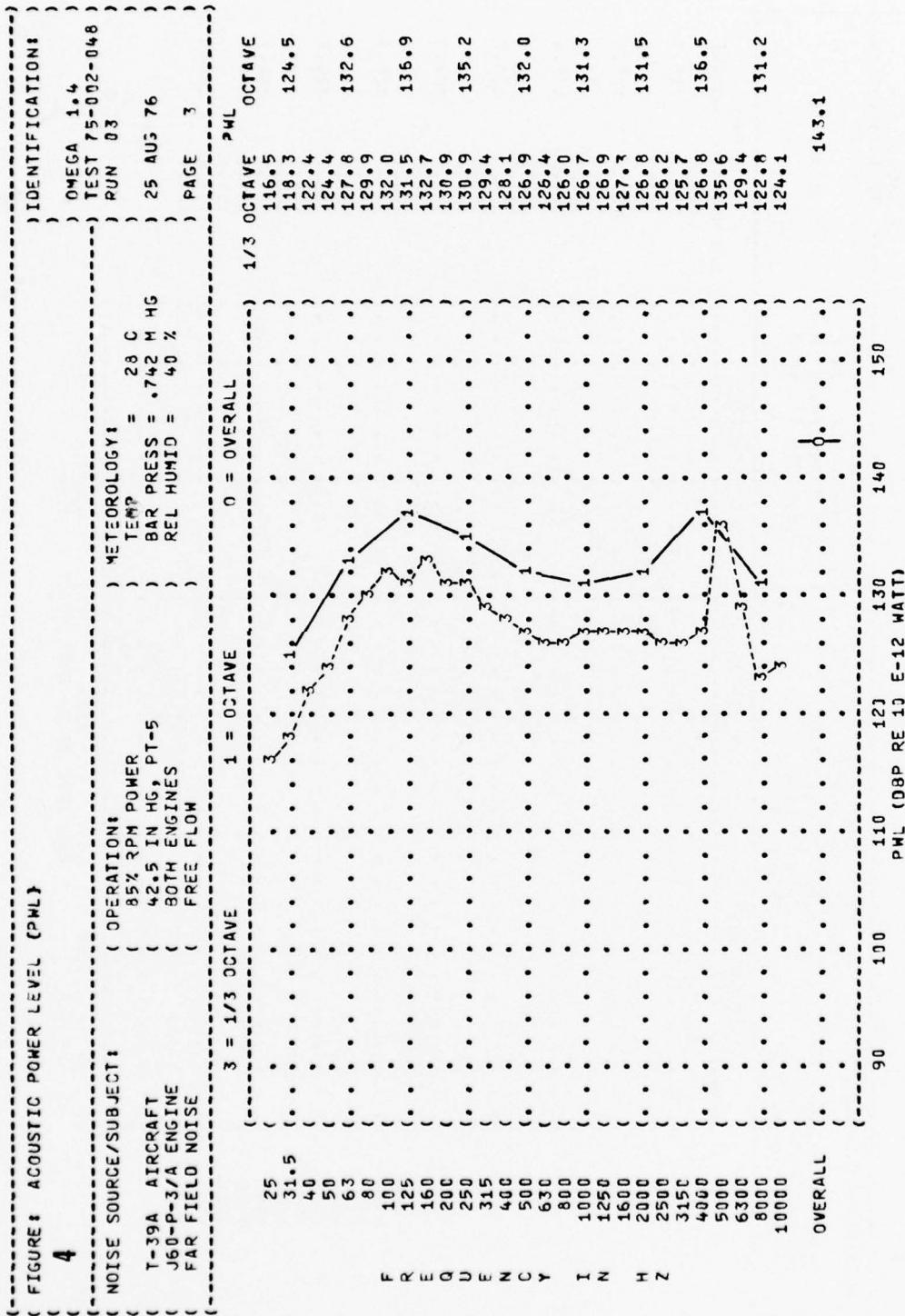


FIGURE 8: ACOUSTIC POWER LEVEL (PWL)

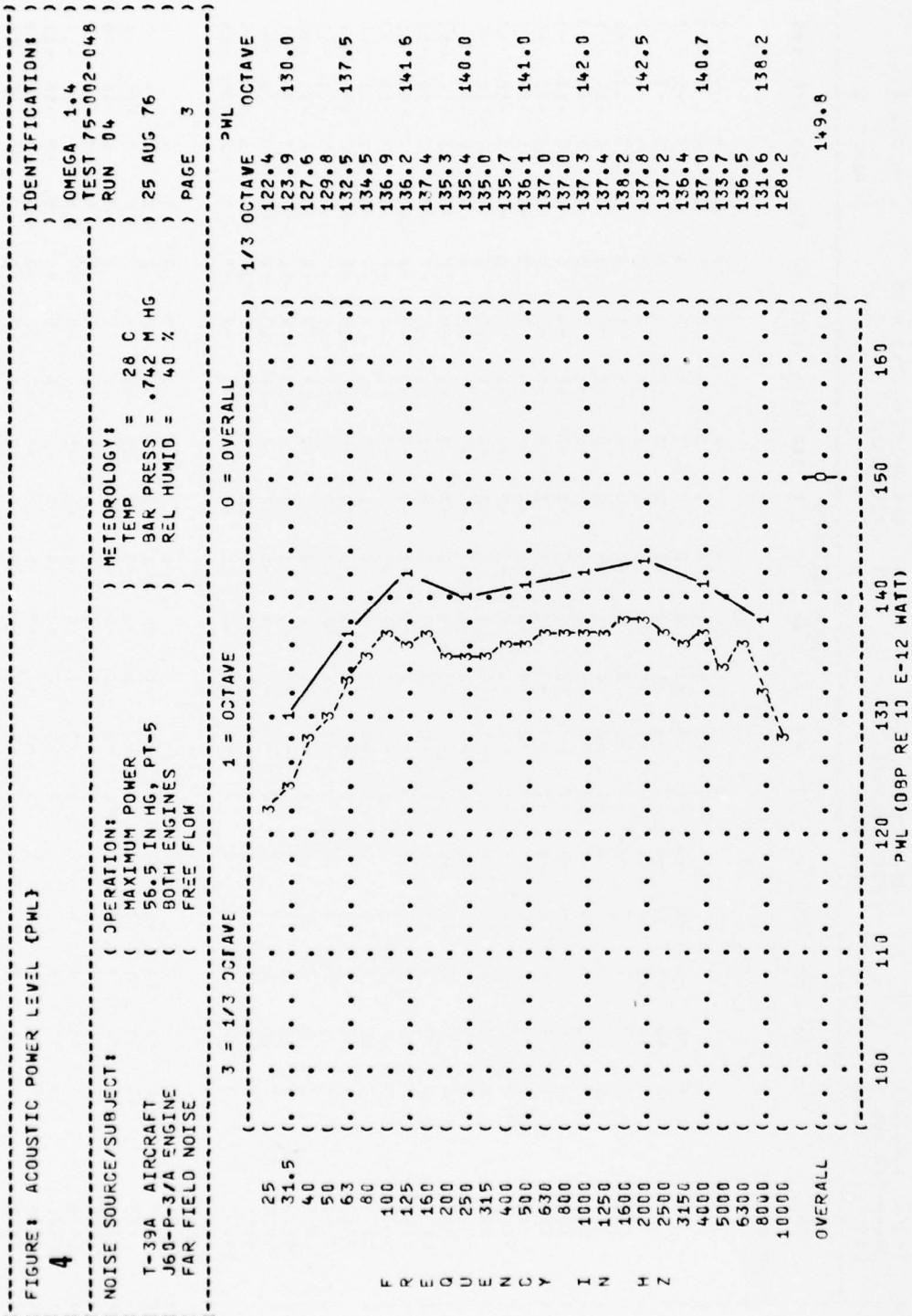


TABLE 6 DIRECTIVITY INDEX (D3)

6

NOISE SOURCE/SUBJECT:		OPERATION:										METEOROLOGY:										IDENTIFICATION:
T-39A AIRCRAFT J60-P-3/A ENGINE FAR FIELD NOISE		(IDLE POWER 30.0 IN HG, PT-5 BOTH ENGINES FREE FLOW)										(TEMP = 28 C BAR PRESS = 742 M HG REL HUMID = 40 %)										(OMEGA 1.4 TEST 75-002-048 RUN 01)
FREQ (HZ)	OCTAVE	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180	PAGE 4	
31.5	25	-3	-1	1	1	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	7	
40	-6	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5	1	
50	-6	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5	3	
63	-6	-4	-3	-2	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	1	
80	-5	-4	-3	-2	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	2	
100	-4	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	2	
125	1	1	3	1	-4	-1	-2	-1	-3	0	0	-1	0	2	0	3	-14	-14	-14	-14	3	
160	3	3	4	-1	-5	-1	-2	-3	-1	-1	-1	-1	-1	2	3	1	5	-10	-10	-10	-10	2
200	6	6	7	6	-3	-3	-3	-2	-1	-3	-2	-1	-1	-1	0	-1	2	-11	-11	-11	-11	1
250	5	5	5	0	-3	-1	-2	-1	-1	-1	-1	-1	-1	-1	0	-1	-1	-11	-11	-11	-11	6
315	5	8	3	3	0	-2	-3	-1	-1	-1	-1	-1	-1	-1	0	-1	-1	-1	-1	-1	6	
400	3	5	2	3	-1	-4	-4	-2	-1	-5	-2	-1	-5	-2	-1	2	6	-1	-12	-12	-12	5
500	1	3	-1	1	-3	-5	-3	-1	3	-3	-3	-1	-3	-1	-1	-1	4	-1	-12	-12	-12	8
630	5	5	3	3	-1	-2	-3	-3	-1	-1	-1	-1	-1	-1	2	-1	3	-1	-10	-10	-10	6
800	4	5	5	2	-1	-2	-1	2	2	-1	-1	-1	-1	-1	0	-1	-1	-14	-14	-14	-14	10
1000	9	7	4	5	2	1	-2	0	0	0	-4	-1	-4	-1	-4	-1	-4	0	-7	-7	-7	7
1250	8	5	4	7	3	3	-5	1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	11	
1600	6	6	7	6	3	1	-6	0	0	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	9	
2000	7	8	7	6	1	1	-6	0	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	6	
2500	9	9	8	6	1	2	-4	2	-1	-1	-1	-1	-1	-1	-1	-1	-1	-10	-10	-10	-10	16
3150	10	8	7	6	4	3	-5	-1	-1	-2	-2	-2	-2	-2	-2	-2	-10	-10	-10	-10	15	
4000	8	9	7	7	3	4	-5	-1	-2	-2	-2	-2	-2	-2	-2	-2	-12	-12	-12	-12	15	
5000	6	11	8	8	1	4	-7	-3	-4	-7	-13	-13	-13	-13	-13	-13	-13	-16	-16	-16	-16	21
6300	7	10	7	3	2	-6	-3	-4	-6	-12	-12	-12	-12	-12	-12	-12	-12	-10	-10	-10	-10	21
8000	9	12	7	7	3	3	-7	-2	-3	-5	-14	-14	-14	-14	-14	-14	-14	-12	-12	-12	-12	19
10000	9	7	6	5	4	-6	-3	-4	-1	-6	-3	-3	-3	-3	-3	-3	-3	-7	-7	-7	-7	18
OCTAVE	31.5	-5	-4	-1	-5	-2	-3	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	2	2	2	2	4
63	-6	-1	1	2	3	-2	-1	-2	-1	-1	-1	-1	-1	-1	-1	-1	-1	3	3	3	3	2
125	-5	6	5	3	2	-1	-3	-2	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	1
250	3	4	1	2	-2	-4	-3	-2	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	8
500	8	6	4	6	3	3	-3	1	0	-6	-6	-6	-6	-6	-6	-6	-6	-12	-12	-12	-12	11
1000	8	6	8	8	6	2	-5	2	-1	-1	-1	-1	-1	-1	-1	-1	-1	-17	-17	-17	-17	11
2000	8	7	10	8	7	7	-7	2	-2	-3	-3	-3	-3	-3	-3	-3	-3	-10	-10	-10	-10	11
4000	7	10	7	7	7	7	-6	-2	-2	-5	-10	-10	-10	-10	-10	-10	-10	-14	-14	-14	-14	18
8000	9	11	7	7	4	3	-6	-2	-2	-5	-10	-10	-10	-10	-10	-10	-10	-15	-15	-15	-15	19
OVERALL	6	7	5	5	1	1	-4	-1	-1	-2	-3	-2	-3	-2	-3	-2	-3	-0	-0	-0	-0	4

TABLE: DIRECTIVITY INDEX (D3)
6

NOISE SOURCE/SUBJECT		OPERATION										METEOROLOGY										IDENTIFICATION
T-39A AIRCRAFT J60-P-3/A ENGINE FAR FIELD NOISE		(75% RPM POWER 36.5 IN HG, PT-5 ROT. ENGINES FREE FLOW)										(TEMP = 28 C BAR PRESS = .742 HG REL HUMID = 40 %)										(OMEGA 1.4 TEST 75-002-048 RUN 02)
FREQ (HZ)	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180	PAGE 4		
OCTAVE																						
25	-3	-5	-7	-5	-7	-3	-6	-3	-2	-2	-3	-3	-2	0	0	6	8	5	5	5	2	
40	-5	-7	-5	-7	-4	-4	-4	-2	-4	-3	-3	-3	-2	0	1	3	6	4	4	4	1	
50	-9	-9	-9	-10	-9	-7	-8	-8	-5	-5	-3	-3	-2	0	1	4	6	5	4	-1	-1	
63	-10	-9	-7	-9	-7	-8	-7	-7	-5	-5	-5	-5	-2	0	0	1	6	4	4	-6	-6	
80	-9	-10	-6	-8	-8	-8	-7	-7	-5	-5	-5	-5	-2	0	1	5	6	5	3	-11	-11	
100	-10	-10	-8	-8	-8	-8	-7	-8	-6	-7	-4	-4	-1	0	0	5	6	5	5	1	-13	
125	-9	-8	-7	-9	-9	-9	-8	-8	-7	-5	-6	-4	-2	-1	4	9	4	4	1	1	-11	
160	-7	-6	-6	-3	-3	-10	-10	-7	-7	-6	-4	-3	-1	5	8	4	4	1	1	-11	-11	
200	-3	-3	-1	-2	-5	-5	-5	-6	-5	-5	-5	-3	-2	0	0	5	8	2	1	-12	-12	
250	-1	-1	-4	-7	-7	-7	-6	-5	-5	-4	-2	-1	2	2	5	8	2	1	-3	-18	-18	
315	3	2	-1	-3	-5	-3	-3	-4	-5	-5	-2	-1	3	5	7	7	-3	-7	-21	-21	-21	
400	2	2	-1	-1	-4	-2	-2	-4	-5	-4	-2	-1	2	4	7	7	-5	-8	-20	-20	-20	
500	0	1	-1	-1	-4	-3	-3	-5	-5	-2	0	1	2	3	6	6	-6	-8	-21	-21	-21	
630	1	1	-2	-2	-1	-1	-3	-4	-3	-1	0	0	2	4	5	5	-5	-7	-22	-22	-22	
800	-3	-0	-2	-3	-2	-2	-2	-4	-4	-2	0	1	2	5	6	6	-5	-7	-22	-22	-22	
1000	-6	-3	-3	-3	-4	-2	-5	-4	0	0	0	0	2	4	3	4	-6	-7	-22	-22	-22	
1250	-6	-2	-5	-3	-3	-3	-4	-4	-1	1	2	4	3	4	4	-7	-7	-9	-22	-22	-22	
1600	-2	-1	-3	-3	-3	-2	-3	-4	-1	-1	0	1	4	5	2	-7	-9	-22	-22	-22	-22	
2000	-2	-1	-1	-3	-4	-3	-3	-4	0	2	1	4	4	4	4	-10	-10	-23	-23	-23	-23	
2500	1	0	3	-1	-2	-1	-2	-2	-3	0	0	0	0	3	3	-1	-10	-12	-24	-24	-24	
3150	1	3	2	2	0	1	-1	-1	-4	-9	-9	-9	-9	3	2	1	-9	-12	-22	-22	-22	
4000	2	1	4	5	3	4	2	-2	-2	-3	-3	-3	-3	2	1	-2	-6	-14	-15	-27	-27	
5000	2	2	4	5	5	5	2	-2	-2	-3	-10	-10	-9	-12	-12	-14	-23	-23	-34	-34	-34	
6300	2	2	2	3	4	1	3	2	1	1	-2	-1	-1	1	1	-4	-13	-13	-23	-23	-23	
8000	4	3	4	5	2	3	2	2	-2	-3	-2	-1	-1	0	-1	-3	-12	-12	-22	-22	-22	
10000	5	6	4	3	6	4	3	6	4	1	-5	-5	-5	-5	-5	-8	-16	-16	-16	-16	-16	
OCTAVE																						
31.5	-4	-7	-7	-6	-8	-8	-8	-7	-5	-5	-5	-5	-3	-4	-1	0	4	6	5	5	2	
63	-9	-10	-7	-3	-3	-5	-5	-5	-5	-5	-5	-5	-3	-3	-2	0	1	5	6	5	3	
125	-9	-7	-3	-1	-1	-1	-1	-4	-2	-2	-2	-2	-3	-3	-1	2	4	6	4	1	-12	
250	0	-1	-1	-3	-3	-4	-3	-2	-2	-2	-2	-2	-1	-1	0	2	4	6	5	0	-15	
500	1	1	-2	-3	-2	-3	-2	-3	-4	-4	-4	-4	-1	-1	1	4	5	6	-5	-8	-21	
1000	-5	-2	-1	-1	-0	-1	-2	-2	-3	-2	-2	-2	-3	-7	-7	-10	-10	-7	-7	-22	-22	
2000	-1	-1	-2	-1	-0	-2	-1	-2	-3	-2	-2	-2	-3	-7	-7	-10	-10	-10	-10	-22	-22	
4000	2	1	5	6	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	2	
8000	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	-1	-1	-1	-1	-1	-14	
OVERALL	-1	-1	1	2	1	1	1	-1	-1	-4	-4	-4	-4	-4	-4	-1	1	3	5	1	-2	

TABLE: DIRECTIVITY INDEX (DB) 6

NOISE SOURCE/SUBJECT:		OPERATION:										METEOROLOGY:									
		85% RPM POWER 42.5 IN HG, PT-5 90TH ENGINES FREE FLOW			TEMP = 28 C BAR PRESS = .742 M HG REL HUMID = 40 %			ANGLE (DEGREES)			TEST 75-002-048 RUN 33			OMEGA 1.4 25 AUG 76			PAGE 4				
FREQ (HZ)	OCTAVE	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180	
1/3 OCTAVE	25	-1	0	-3	-8	-6	-3	-3	-1	-3	-3	-3	-2	0	2	4	8	3	4		
T-39A AIRCRAFT	31.5	-5	-7	-10	-9	-9	-5	-5	-3	-1	-1	-4	-5	-2	1	5	7	2	3		
J6Q-P-3/A ENGINE	40	-7	-10	-10	-9	-9	-10	-9	-9	-7	-1	-5	-6	-2	1	2	6	7	-0		
FAR FIELD NOISE	50	-10	-10	-11	-11	-11	-11	-11	-11	-9	-7	-5	-5	-2	1	4	7	-1	-2		
	63	-11	-9	-10	-10	-10	-12	-12	-12	-11	-9	-8	-2	-3	2	3	8	6	-7		
	80	-11	-10	-10	-10	-10	-10	-10	-10	-10	-10	-10	-7	-4	-2	1	5	8	6		
	100	-12	-10	-9	-7	-12	-11	-11	-11	-10	-8	-6	-7	-5	-3	0	5	9	5		
	125	-11	-10	-8	-9	-12	-10	-10	-10	-8	-7	-7	-7	-5	-2	2	6	6	-9		
	160	-11	-8	-8	-8	-12	-11	-11	-12	-9	-5	-5	-7	-4	1	6	7	6	-6		
	200	-6	-4	-5	-5	-9	-10	-9	-10	-9	-6	-5	-7	-5	-3	2	4	8	6		
	250	-4	-3	-4	-5	-9	-10	-10	-10	-9	-6	-6	-7	-4	-3	2	4	6	-7		
	315	-1	-1	-2	-3	-7	-3	-8	-5	-5	-5	-5	-5	-4	-3	2	3	6	-6		
	400	0	-1	-2	-0	-5	-6	-6	-3	-4	-4	-4	-5	-2	2	1	6	8	-7		
	500	-5	-5	-1	2	-4	-5	-5	-5	-2	-3	-1	-2	-1	1	6	5	-9	-15		
	630	-1	-1	0	0	-4	-5	-5	-5	-2	-1	-1	-1	3	0	-1	1	1	-17		
	800	-1	-1	0	0	-1	-3	-4	0	-2	-1	-1	-1	3	0	-1	1	1	-17		
	1000	-3	-4	-1	-1	-2	-5	-5	-5	-5	-5	-5	-5	-4	-2	1	1	1	-13		
	1250	-5	-3	-3	-4	-3	-5	-5	-5	-5	-5	-5	-5	-5	-3	-1	1	1	-13		
	1600	-5	-2	-3	-2	-2	-4	-4	-4	-3	-2	-2	-2	-2	-2	-2	2	3	-9		
	2000	-3	-2	0	-1	-3	-5	-4	-0	0	0	0	0	5	-3	-1	1	1	-17		
	2500	-2	-0	3	1	-2	-2	-2	-2	1	1	1	0	4	-5	-2	-4	-1	-21		
	3150	1	1	4	2	-1	-1	-2	-3	1	0	2	0	4	-5	-3	-2	-4	-22		
	4000	-0	0	1	2	-0	-2	-1	-2	-1	0	1	1	4	-4	-3	-4	-4	-20		
	5000	4	4	6	5	3	2	2	-1	-0	-6	-7	-7	-14	-16	-16	-15	-24	-33		
	6300	5	3	8	4	4	3	2	-1	-0	-3	-4	-3	-10	-7	-11	-11	-20	-29		
	8000	4	4	4	4	2	2	-2	0	-1	0	1	2	-5	-4	-6	-9	-17	-26		
	10000	5	4	8	5	4	3	2	-1	-0	-2	-2	-2	-9	-9	-10	-13	-22	-30		
OCTAVE	31.5	-5	-10	-3	-9	-9	-5	-2	1	-5	-5	-5	-2	1	2	6	7	1	2		
	63	-11	-9	-10	-11	-12	-10	-10	-8	-7	-7	-5	-3	-1	1	4	8	6	-7		
	125	-11	-9	-8	-8	-11	-11	-11	-9	-9	-6	-6	-4	-3	1	6	6	-8	-13		
	250	-4	-3	-4	-4	-9	-9	-9	-9	-9	-6	-6	-4	-3	2	4	7	6	-7		
	500	0	-1	1	-4	-5	-2	-3	-2	-3	-2	-3	-1	1	1	5	6	-8	-15		
	1000	-3	-3	-1	-1	-2	-5	-4	-3	-1	-1	-1	-1	4	-1	0	1	-11	-18		
	2000	-3	-1	0	-1	0	-3	-4	2	1	-1	0	5	-3	-1	0	2	0	-13		
	4000	3	3	7	4	4	2	1	-1	-0	-3	-4	-2	-10	-9	-9	-9	-20	-27		
	8000	4	3	7	4	4	3	1	-1	-1	-2	-3	-2	-9	-7	-10	-11	-20	-28		
OVERALL	-2	-2	1	-1	-2	-3	-4	-3	-2	-3	-3	-3	-3	-0	0	3	6	-8	-11		

TABLE: DIRECTIVITY INDEX (03)

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NOISE SOURCE/SUBJECT:		OPERATION:										IDENTIFICATION:									
T-39A AIRCRAFT		MAXIMUM POWER										OMEGA 1,4		TEST 75-002-048		RUN 34		TEMP = 28 C		BAR PRESS = .742 M HG	
J60-P-3/A ENGINE		56.5 IN HG, PT-5										REL HUMID = 40 %		25 AUG 76		PAGE 4		ANGLE (DEGREES)		140 150 160 170 180	
FAR FIELD NOISE		BOTW ENGINES										FREE FLOW		ANGLE (DEGREES)		110 120 130 140 150 160 170 180		ANGLE (DEGREES)		110 120 130 140 150 160 170 180	
FREQ (HZ)		0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180	110 120 130 140 150 160 170 180
1/3 OCTAVE																					
25		-5	-8	-7	-7	-7	-5	-5	-3	-3	-5	-4	-5	-3	-3	-3	0	5	5	4	4
31.5		-6	-9	-6	-6	-5	-5	-5	-3	-3	-5	-4	-5	-3	-3	-3	0	5	5	3	3
40		-6	-8	-9	-7	-9	-7	-7	-7	-4	-5	-6	-5	-6	-5	-5	1	5	6	6	0
50		-12	-12	-9	-11	-9	-7	-7	-7	-4	-5	-6	-5	-6	-5	-5	4	7	4	4	-1
63		-10	-10	-9	-9	-10	-9	-7	-8	-6	-6	-6	-6	-4	-4	-4	0	4	5	7	-7
80		-11	-11	-11	-9	-10	-10	-8	-7	-7	-7	-7	-5	-1	-1	-1	3	6	6	2	-11
100		-10	-10	-10	-7	-9	-10	-9	-7	-7	-7	-7	-4	-1	-1	-1	4	7	6	0	-12
125		-10	-8	-6	-5	-8	-8	-8	-8	-5	-5	-5	-5	-1	-1	-1	5	6	7	-2	-12
160		-7	-7	-5	-5	-3	-3	-9	-7	-8	-6	-6	-3	-1	-1	-1	5	7	5	-3	-14
200		-4	-4	-1	-3	-5	-7	-7	-7	-7	-5	-5	-4	-1	-1	-1	4	6	6	-1	-13
250		-2	0	-1	-2	-5	-7	-7	-7	-7	-5	-5	-5	-1	-1	-1	6	5	6	-1	-10
315		-2	2	4	-1	-4	-5	-5	-7	-7	-4	-5	-5	-7	-7	-7	1	3	6	5	-8
400		-2	2	2	-1	-4	-4	-5	-4	-4	-3	-4	-4	-6	-6	-6	2	3	5	0	-6
500		-2	0	0	-3	-5	-5	-5	-5	-5	-3	-3	-3	-3	-3	-3	1	4	1	-6	-6
630		-4	-1	0	-2	-4	-4	-4	-4	-4	-4	-4	-4	-1	-1	-1	3	5	6	-1	-8
800		-4	-1	-1	-1	-4	-4	-4	-4	-2	-2	-2	-2	-1	-1	-1	3	5	5	-1	-10
1000		-4	-4	0	-1	-4	-4	-4	-4	-4	-1	-1	-1	0	0	0	3	5	5	-3	-10
1250		-7	-4	-2	-4	-4	-4	-4	-4	-2	-1	-1	-1	0	0	0	4	4	4	-1	-13
1600		-6	-5	-3	-5	-3	-3	-3	-3	-1	-2	-1	-1	0	0	0	4	4	4	-1	-14
2000		-10	-7	-4	-6	-6	-6	-6	-6	-4	-4	-4	-4	-2	-2	-2	5	4	4	-2	-12
2500		-7	-5	-4	-5	-3	-2	-3	-3	-2	-2	-2	-2	-0	-0	-0	3	5	3	-3	-12
3150		-2	-1	1	-3	-1	-2	-2	-2	-4	-1	-1	-1	1	1	1	4	4	4	-2	-14
4000		-5	-2	-3	-2	-3	-2	-2	-2	-4	-5	-1	-1	2	2	2	3	4	4	-1	-14
5000		-4	-3	-1	-5	-2	-2	-2	-2	-4	-5	-2	-2	2	2	2	2	3	4	-2	-14
6300		4	5	7	3	3	3	3	3	1	-3	-2	-2	-0	-0	-0	1	3	3	-6	-17
8000		-1	-6	2	-3	-2	-3	-3	-3	-4	-1	-2	-2	-1	-1	-1	2	2	2	-7	-14
10000		1	-1	0	3	-1	-1	-1	-1	-2	-4	-1	-1	1	1	1	3	3	3	-2	-7
OCTAVE																					
31.5		-7	-8	-7	-8	-7	-8	-6	-5	-5	-7	-7	-6	-6	-6	-6	-2	1	5	6	7
63		-11	-8	-8	-9	-10	-9	-9	-7	-7	-7	-7	-6	-6	-6	-6	-6	0	7	3	-7
125		-9	-8	-6	-7	-5	-5	-5	-6	-7	-6	-7	-6	-6	-6	-6	-5	0	5	6	-13
250		-1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	4	6	6	-10
500		-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3	0	-7
1000		-5	-3	-2	-2	-4	-4	-4	-4	-4	-3	-3	-3	-3	-3	-3	-3	2	2	2	-11
2000		-8	-6	-4	-4	-5	-5	-5	-5	-5	-3	-3	-3	-3	-3	-3	-3	4	5	3	-13
4000		-3	-2	-1	-2	-2	-2	-2	-2	-1	-1	-1	-1	-1	-1	-1	-1	4	4	-1	-6
8000		3	5	7	2	2	2	2	2	1	-1	-1	-1	-1	-1	-1	-1	2	1	-5	-9
OVERALL		-4	-2	-1	-3	-4	-4	-4	-4	-5	-4	-4	-2	-2	-2	-2	-2	4	3	4	-1
																					-9

FIGURE: OVERALL SOUND PRESSURE LEVEL (OASPL)
5 EQUAL LEVEL CONTOURS (DB)

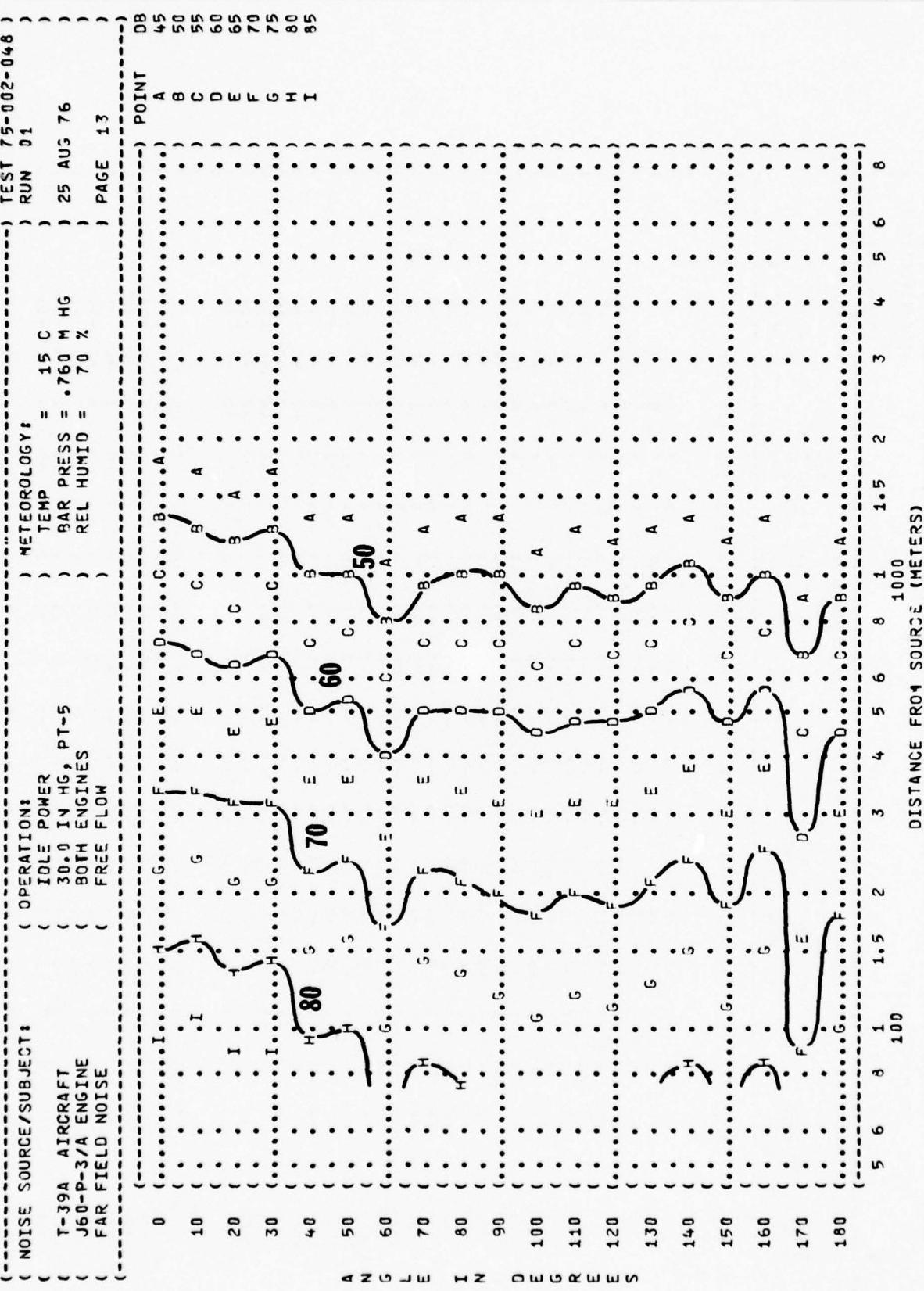


FIGURE: OVERALL SOUND PRESSURE LEVEL (OASPL)
EQUAL LEVEL CONTOURS (DB)

5

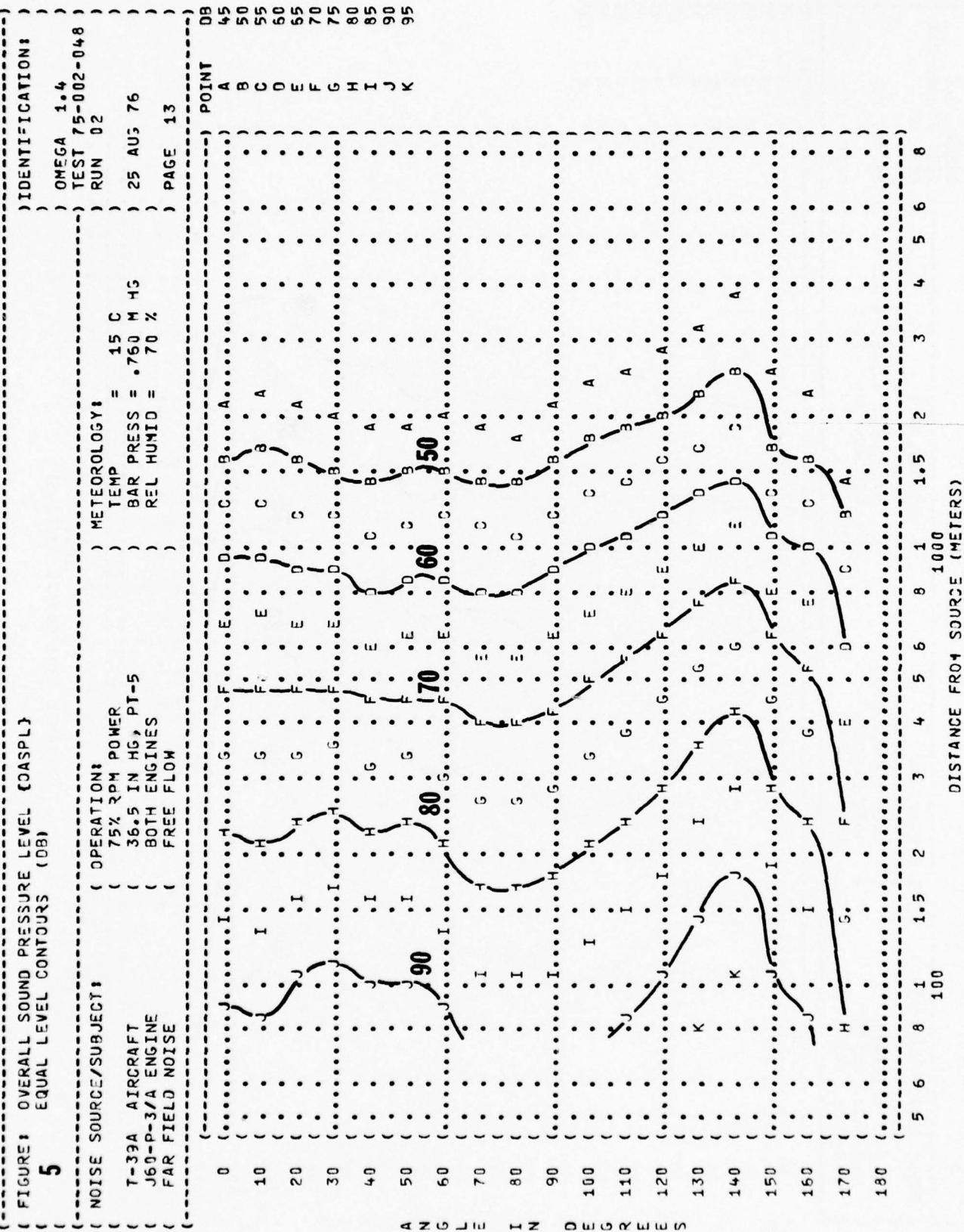


FIGURE: OVERALL SOUND PRESSURE LEVEL (OASPL)
5
 EQUAL LEVEL CONTOURS (DB)

NOISE SOURCE/SUBJECT:

(T-39A AIRCRAFT
 (J60-P-3/A ENGINE
 (FAR FIELD NOISE
 (FREE FLOW

OPERATION:

(85% RPM POWER
 (42.5 IN HG, PT-5
 (BOTH ENGINES
 (FREE FLOW

MEASURED:

(TEMP = 15 C
 (BAR PRESS = .760 HG
 (REL HUMID = 70 %

TEST:

75-002-048

RUN:

03

PAGE:

13

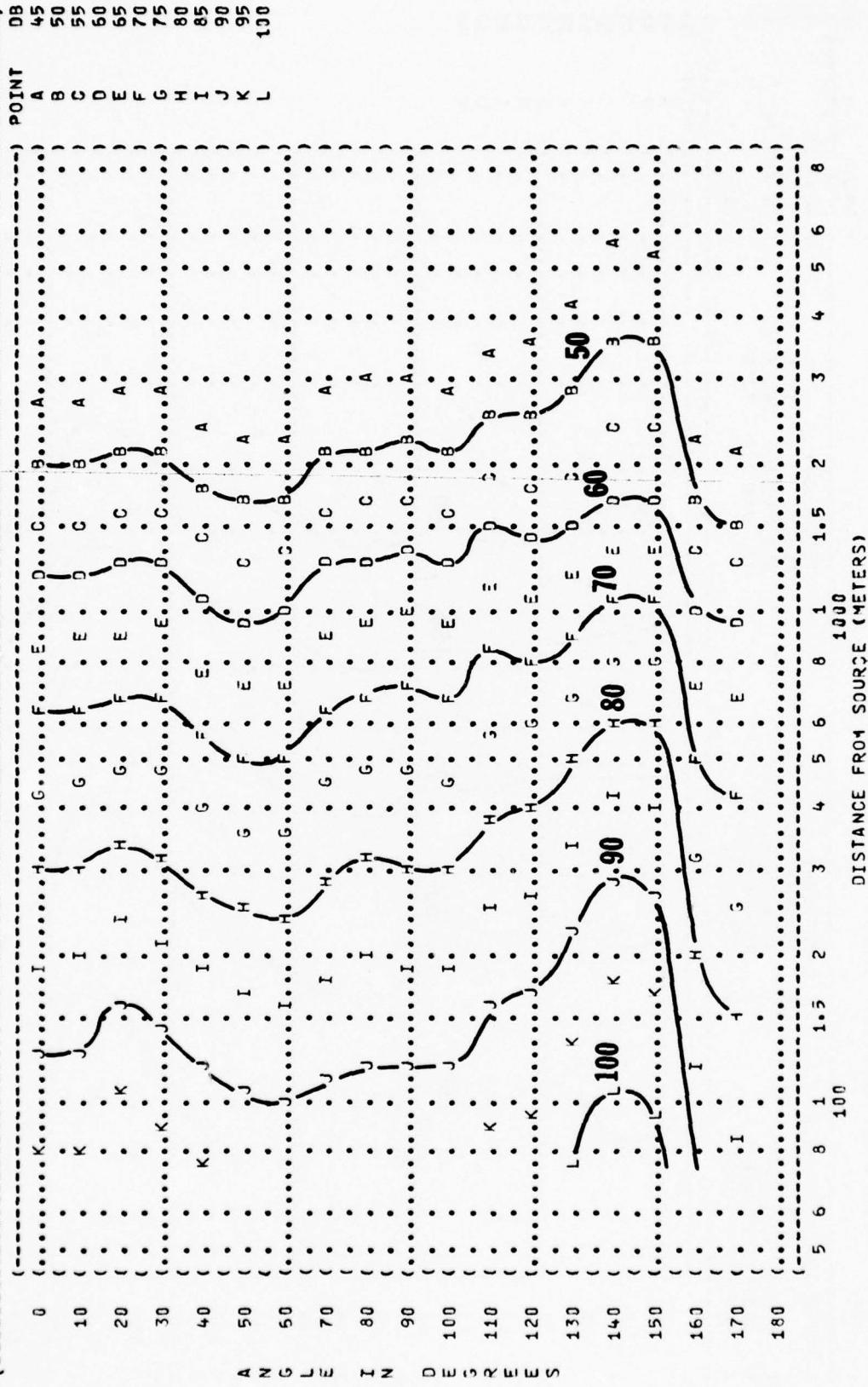
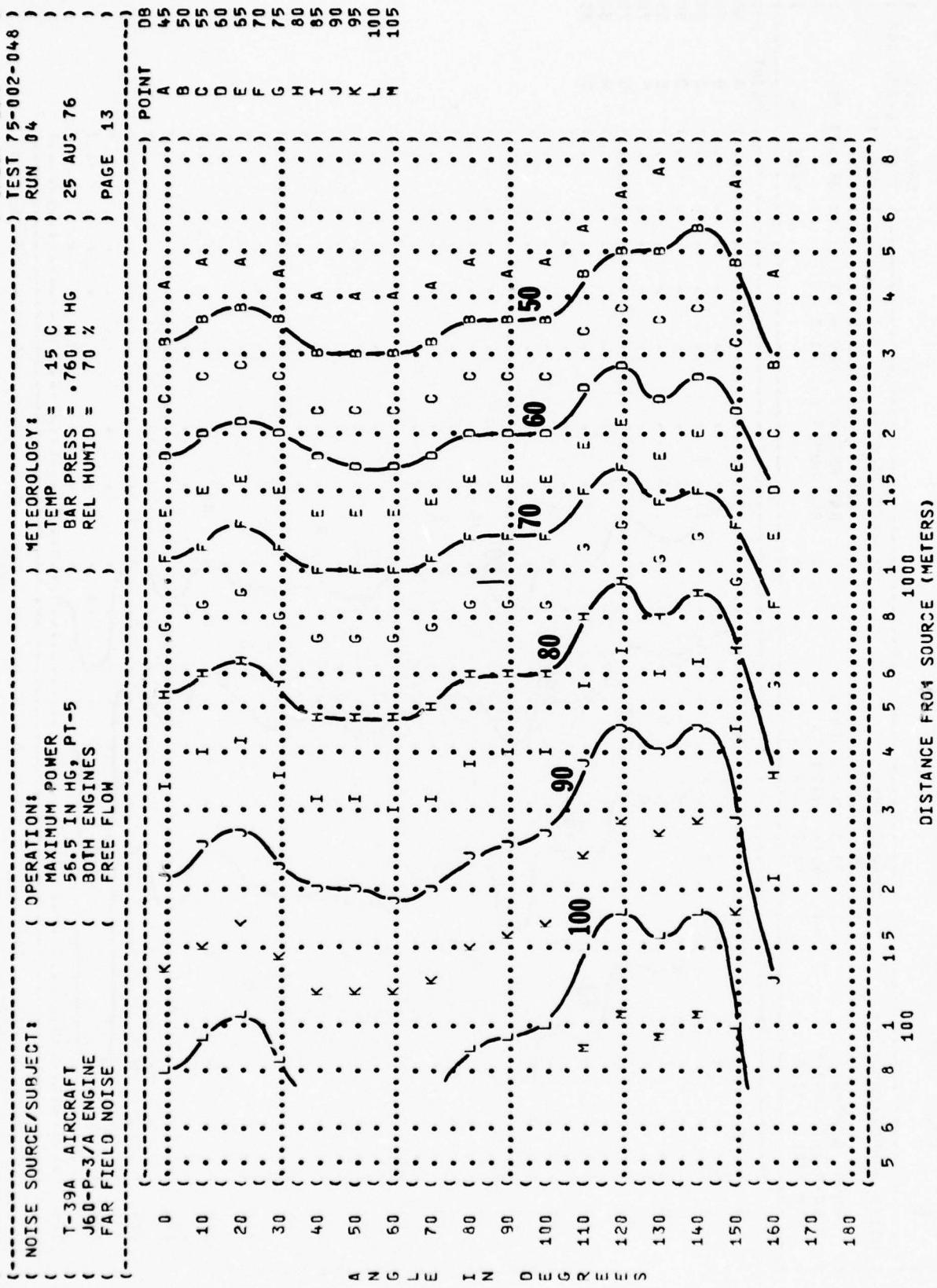


FIGURE 5
OVERALL SOUND PRESSURE LEVEL (OASPL)
EQUAL LEVEL CONTOURS (08)



(FIGURE: C-WEIGHTED OVERALL SOUND LEVEL (DBC)
6
 EQUAL LEVEL CONTOURS (DBC)

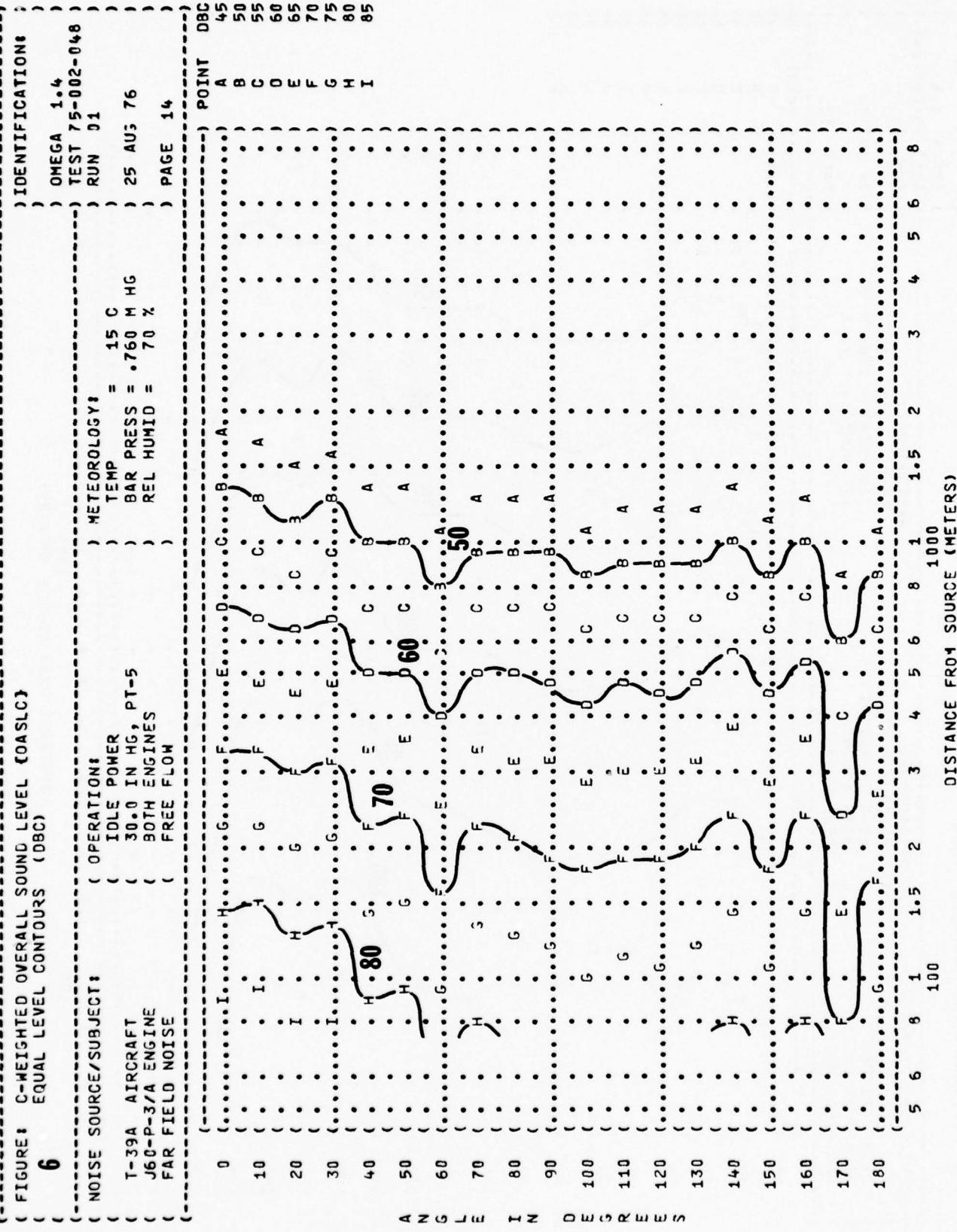


FIGURE 6 C-WEIGHTED OVERALL SOUND LEVEL (OASLC) EQUAL LEVEL CONTOURS (DBC)

6

NOISE SOURCE/SUBJECT:
 T-39A AIRCRAFT
 J60-P-3/A ENGINE
 FAR FIELD NOISE

OPERATION:
 75% RPM POWER
 36.5 IN HG, PT-5
 BOTH ENGINES
 FREE FLOW

METEOROLOGY:
 TEMP = 15 C
 BAR PRESS = .760 M HG
 REL HUMID = 70 %

TEST 75-002-048
 RUN 02

PAGE 14

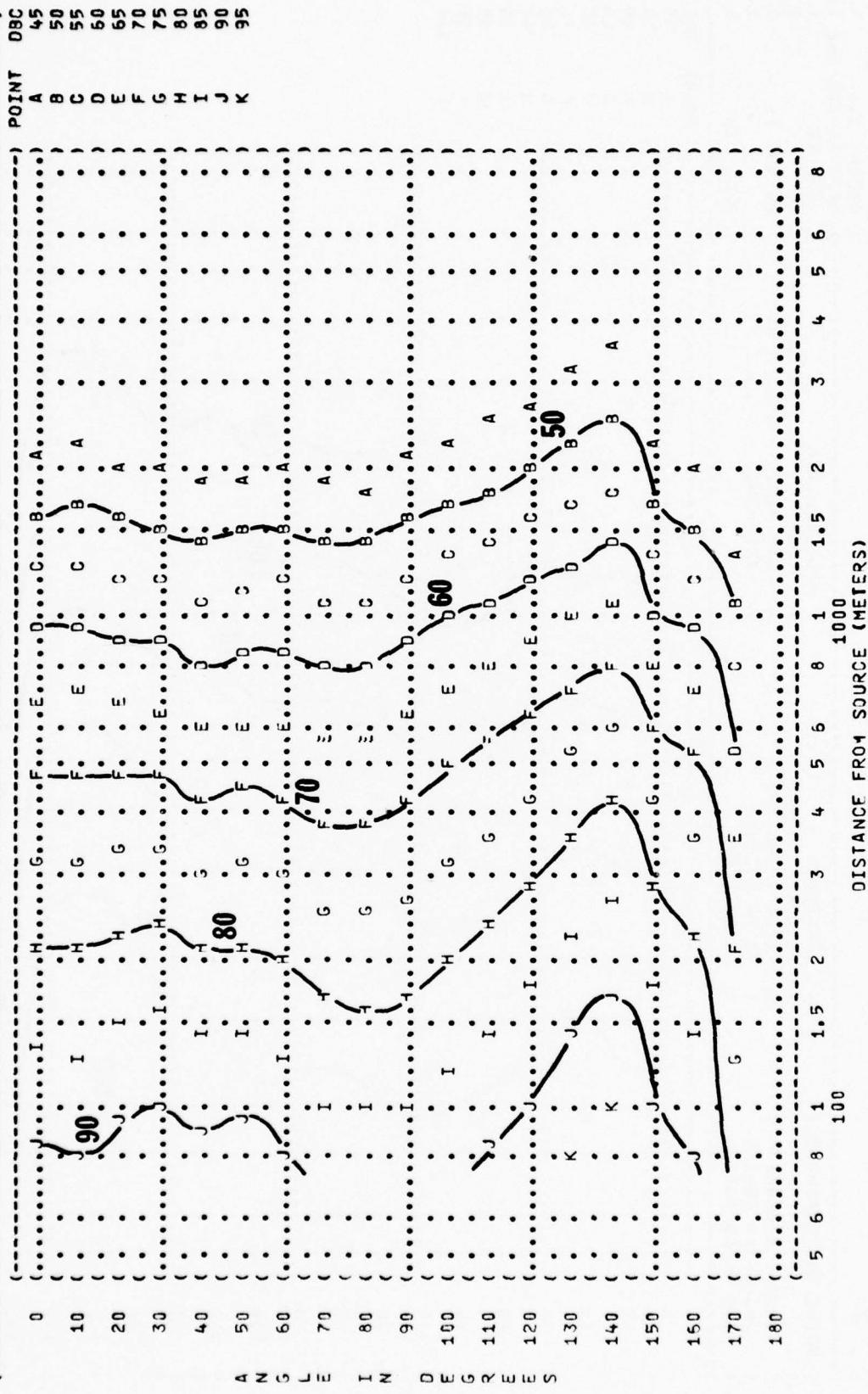


FIGURE 6 C-WEIGHTED OVERALL SOUND LEVEL (OASLC) EQUAL LEVEL CONTOURS (DBC)

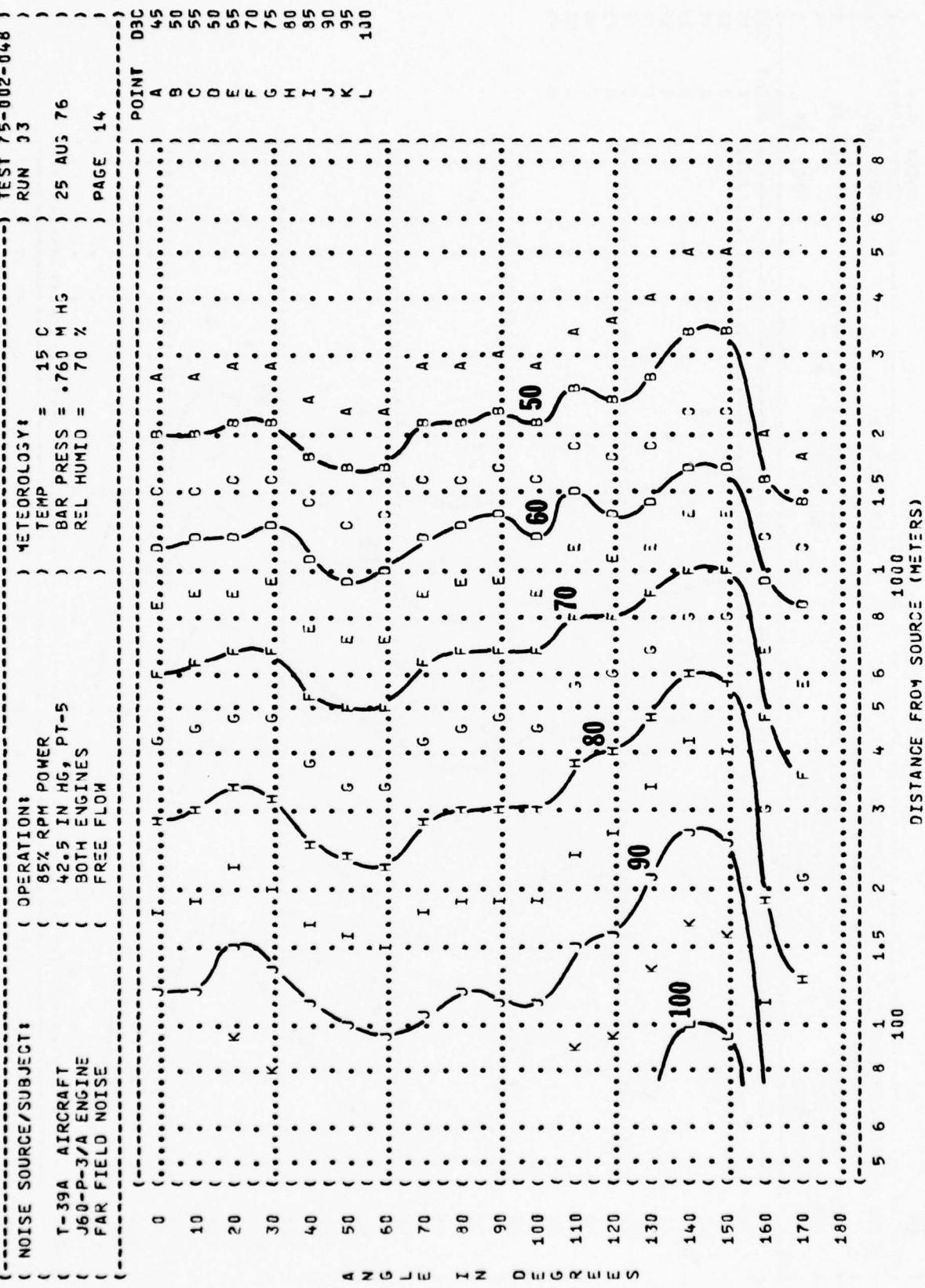
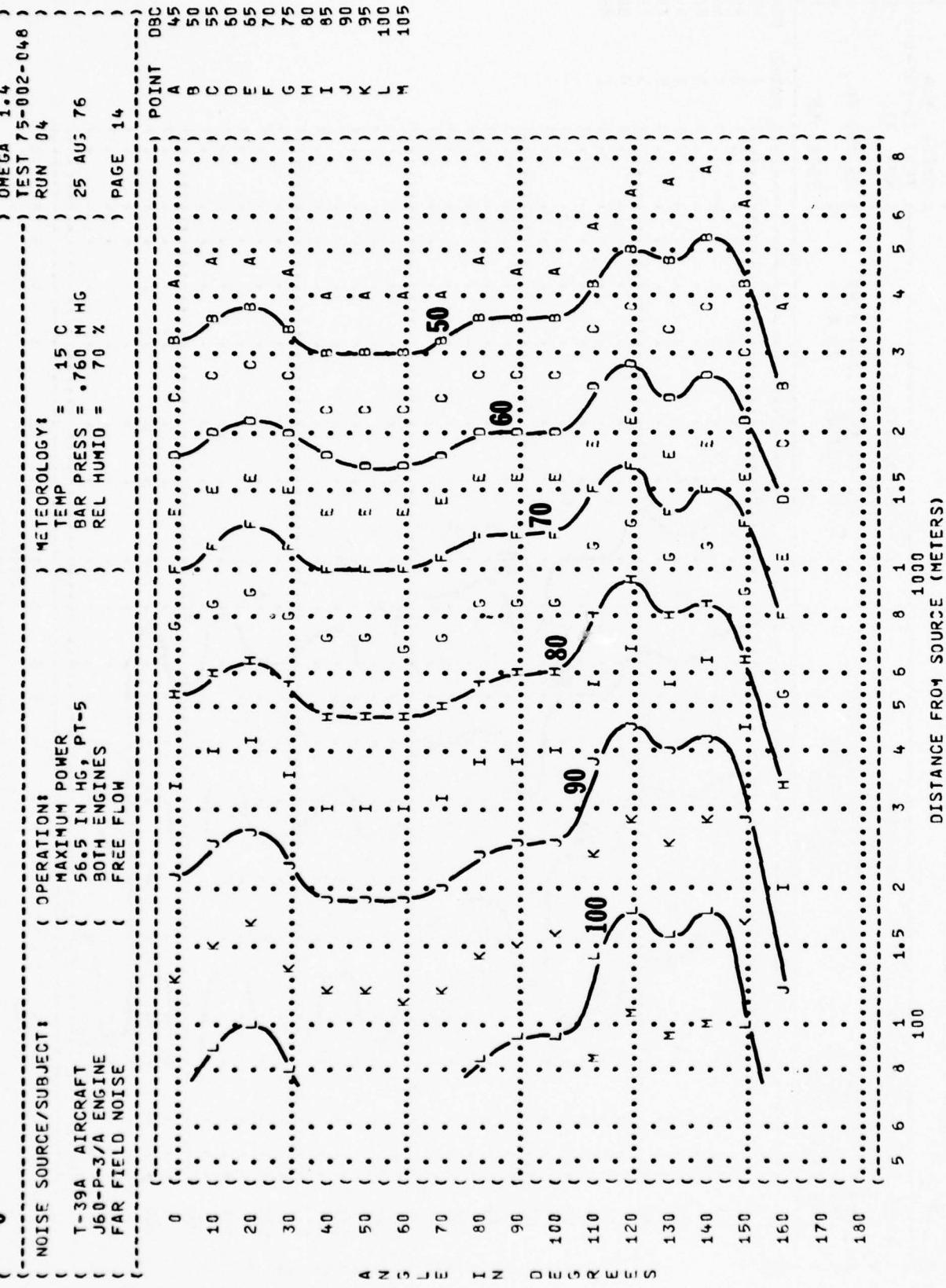


FIGURE 6 C-WEIGHTED OVERALL SOUND LEVEL (OASLC)
EQUAL LEVEL CONTOURS (OBC)



(FIGURE: A-WEIGHTED OVERALL SOUND LEVEL (DBA)
 7 EQUAL LEVEL CONTOURS (DBA)

NOISE SOURCE/SUBJECT:

T-39A AIRCRAFT
 J60-P-3/A ENGINE
 FAR FIELD NOISE

OPERATION:

IDLE POWER
 30.0 IN HG, PT-5
 BOTH ENGINES
 FREE FLOW

IDENTIFICATIONS:

OMEGA 1.4
 TEST 75-002-048
 RUN 01

METEOROLOGY:

TEMP = 15 C
 BAR PRESS = .760 HG
 REL HUMID = 70 %

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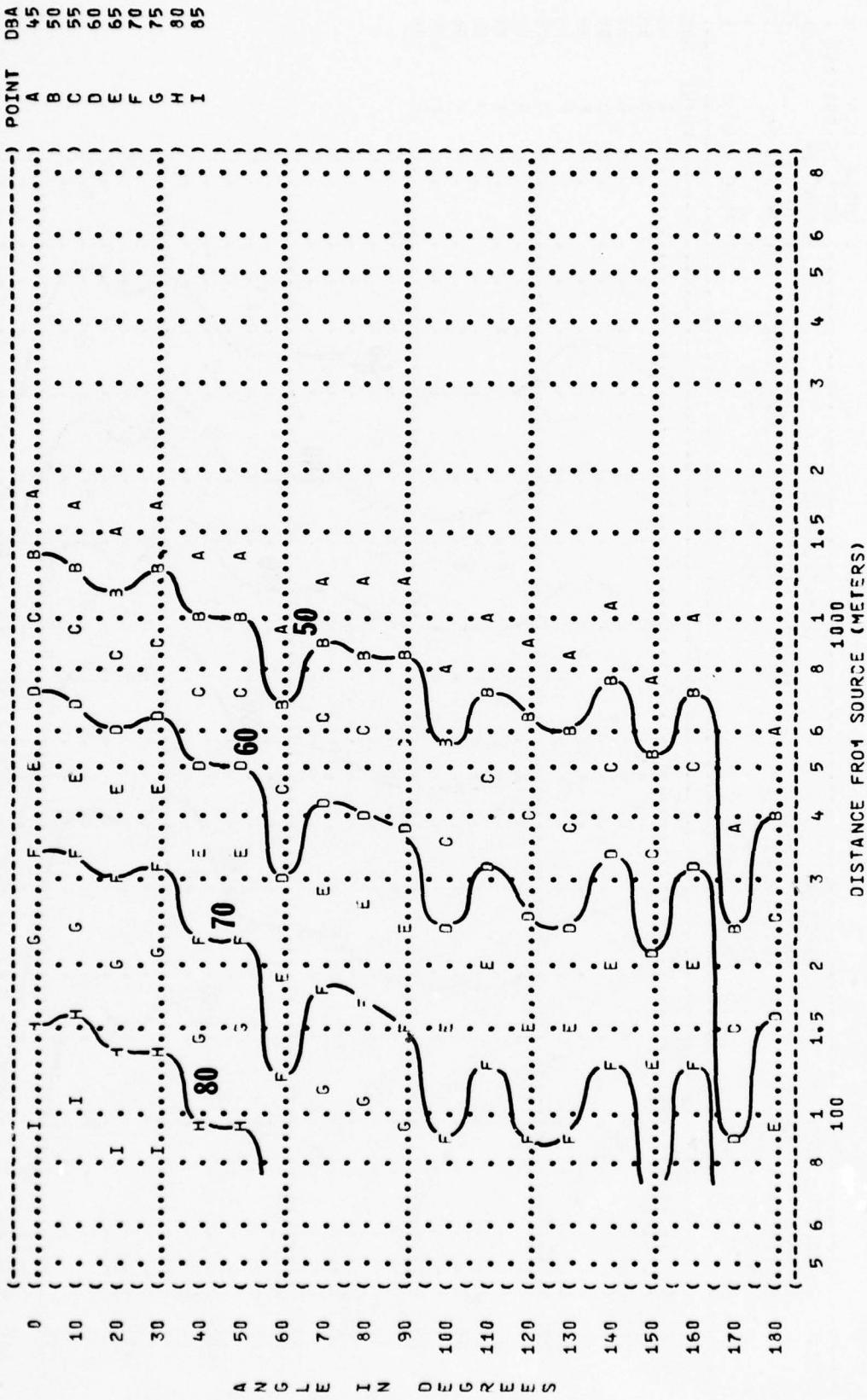


FIGURE: A-WEIGHTED OVERALL SOUND LEVEL (DBA)
7 EQUAL LEVEL CONTOURS

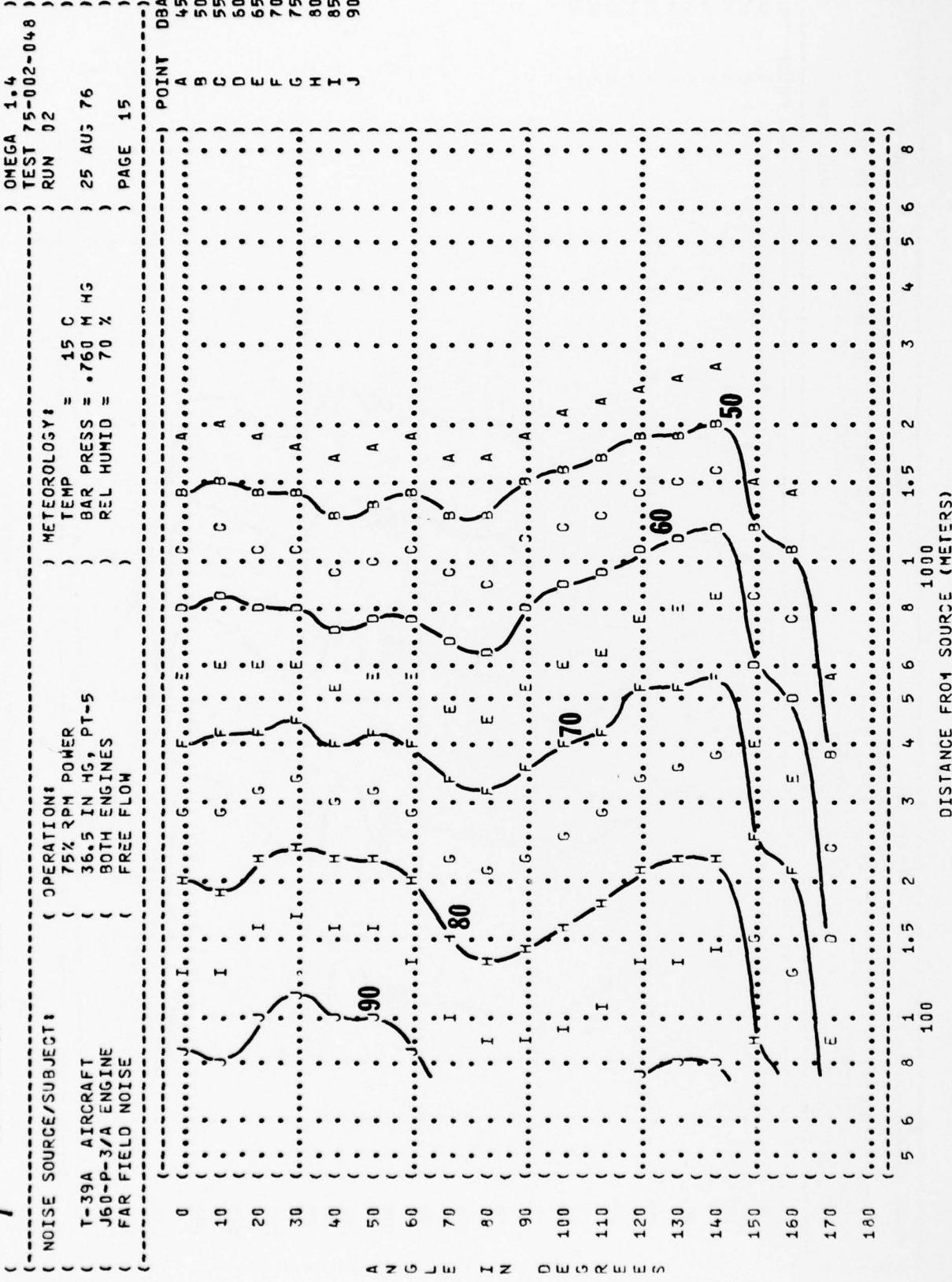


FIGURE 7 A-WEIGHTED OVERALL SOUND LEVEL (DBA) EQUAL LEVEL CONTOURS

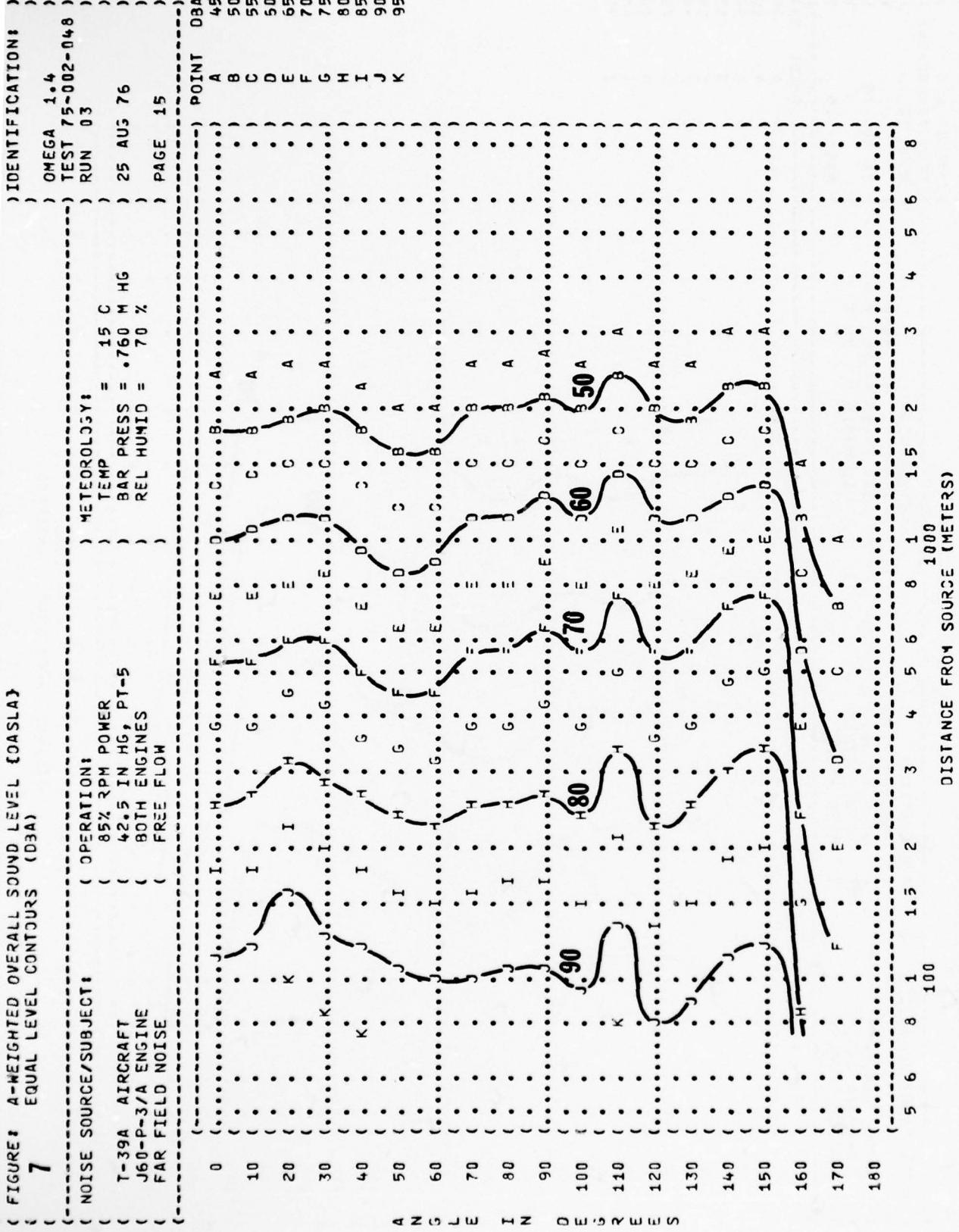


FIGURE 1 A-WEIGHTED OVERALL SOUND LEVEL (DBA)

7

NOISE SOURCE/SUBJECT:

T-39A AIRCRAFT
J60-P-3/A ENGINE
FAR FIELD NOISE

OPERATION:
MAXIMUM POWER
56.5 IN HG, PT-5
BOTH ENGINES
FREE FLOW

METEOROLOGY:

TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

TEST 75-002-048

RUN 04

25 AUG 76

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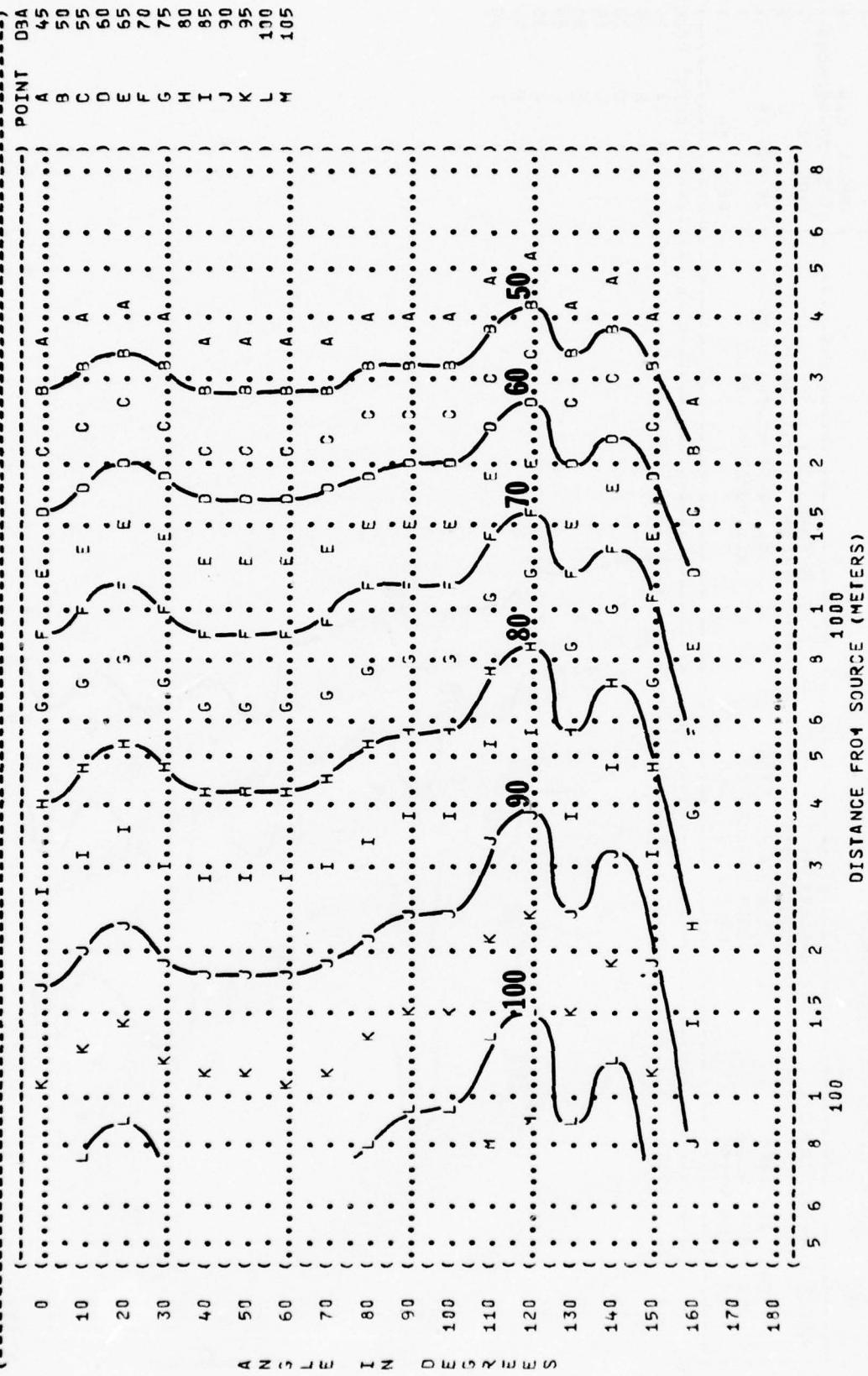


FIGURE: PERCEIVED NOISE LEVEL WITH SMOOTH TONE CORRECTION (PNLT)
8 EQUAL LEVEL CONTOURS (PNDB)

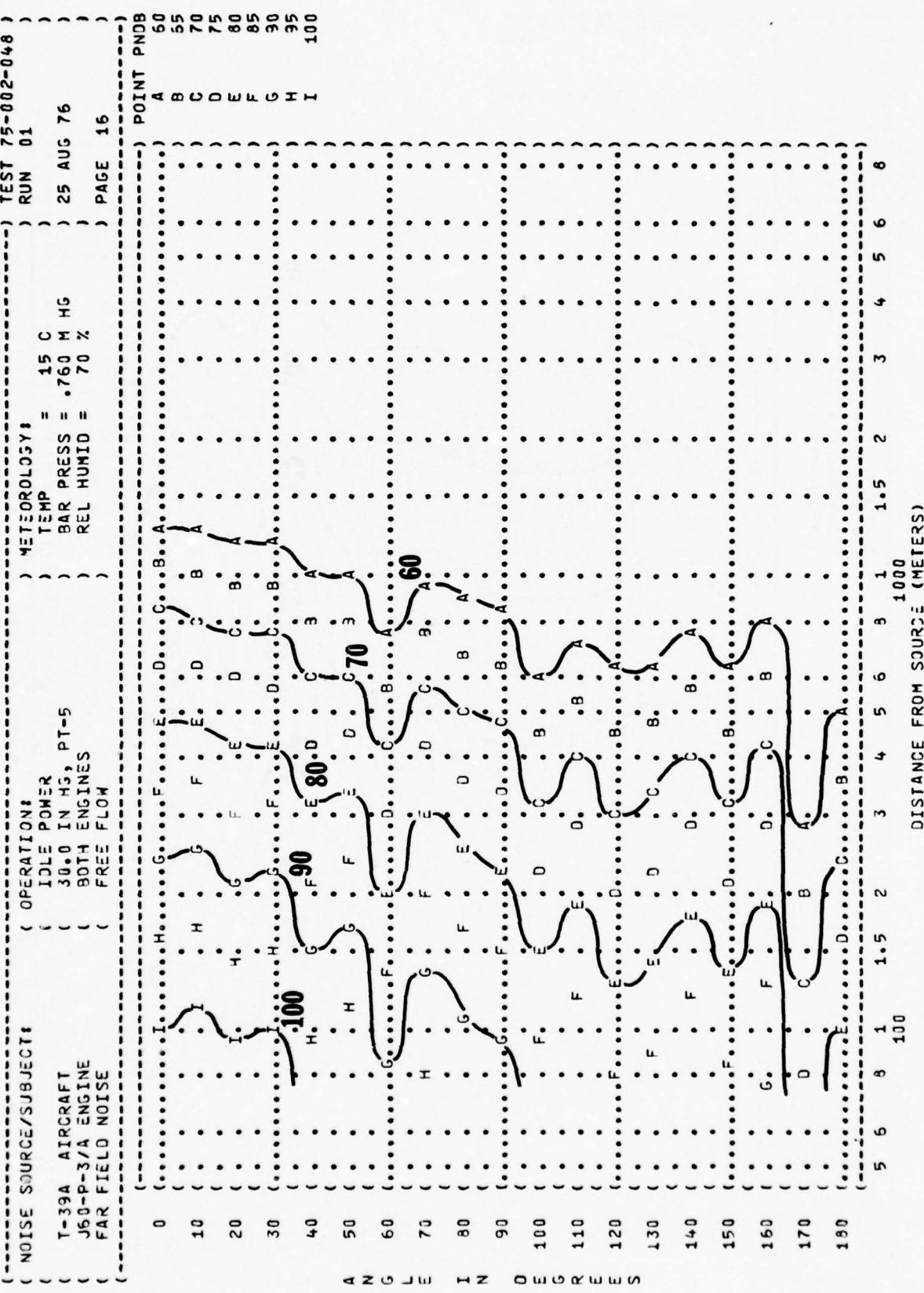


FIGURE: PERCEIVED NOISE LEVEL WITH SMOOTH TONE CORRECTION (PNL-T)
8
 EQUAL LEVEL CONTOURS (PNDB)

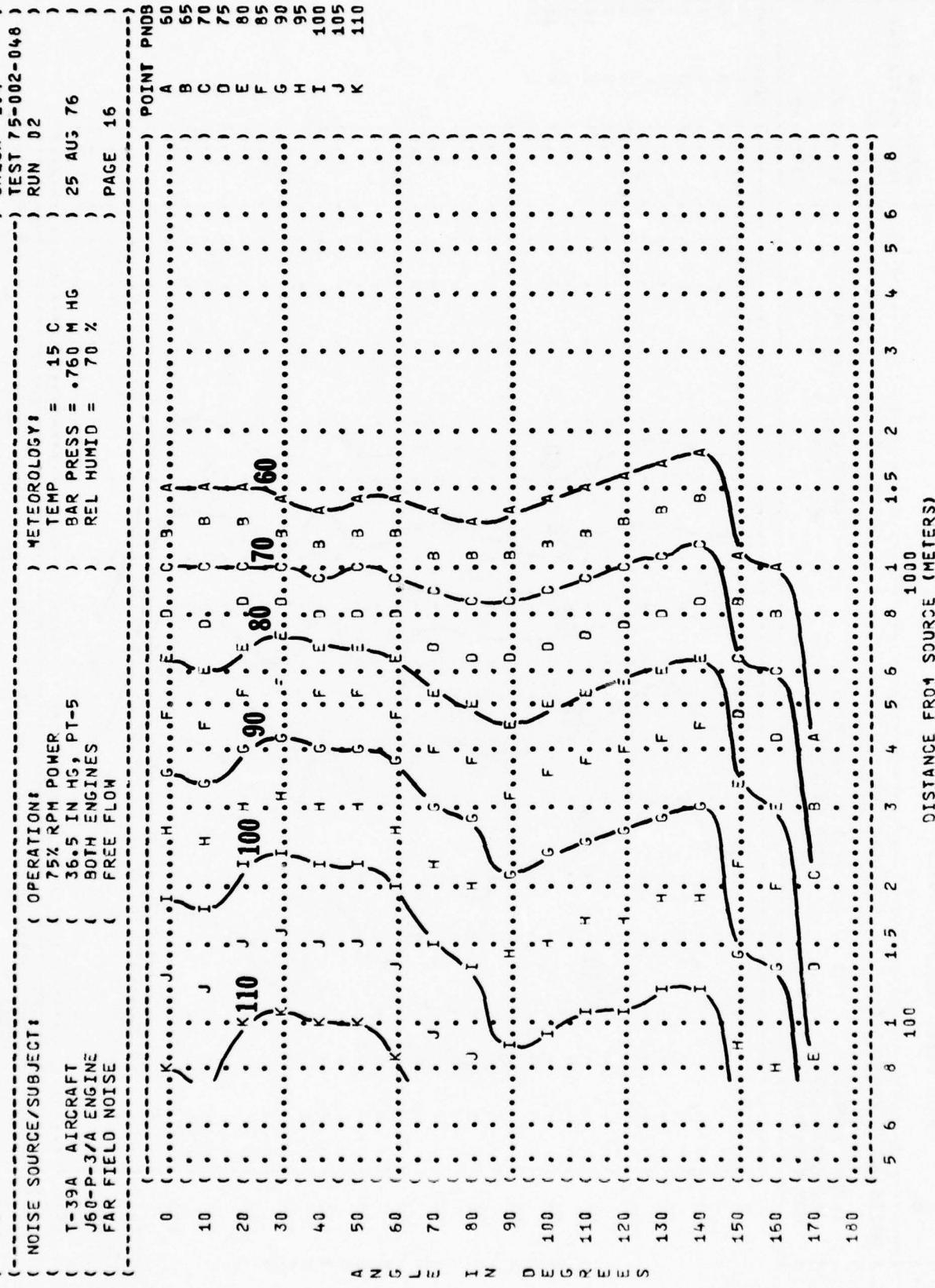


FIGURE 1 PERCEIVED NOISE LEVEL WITH SMOOTH TONE CORRECTION (PNLT) EQUAL LEVEL CONTOURS (PNBD)

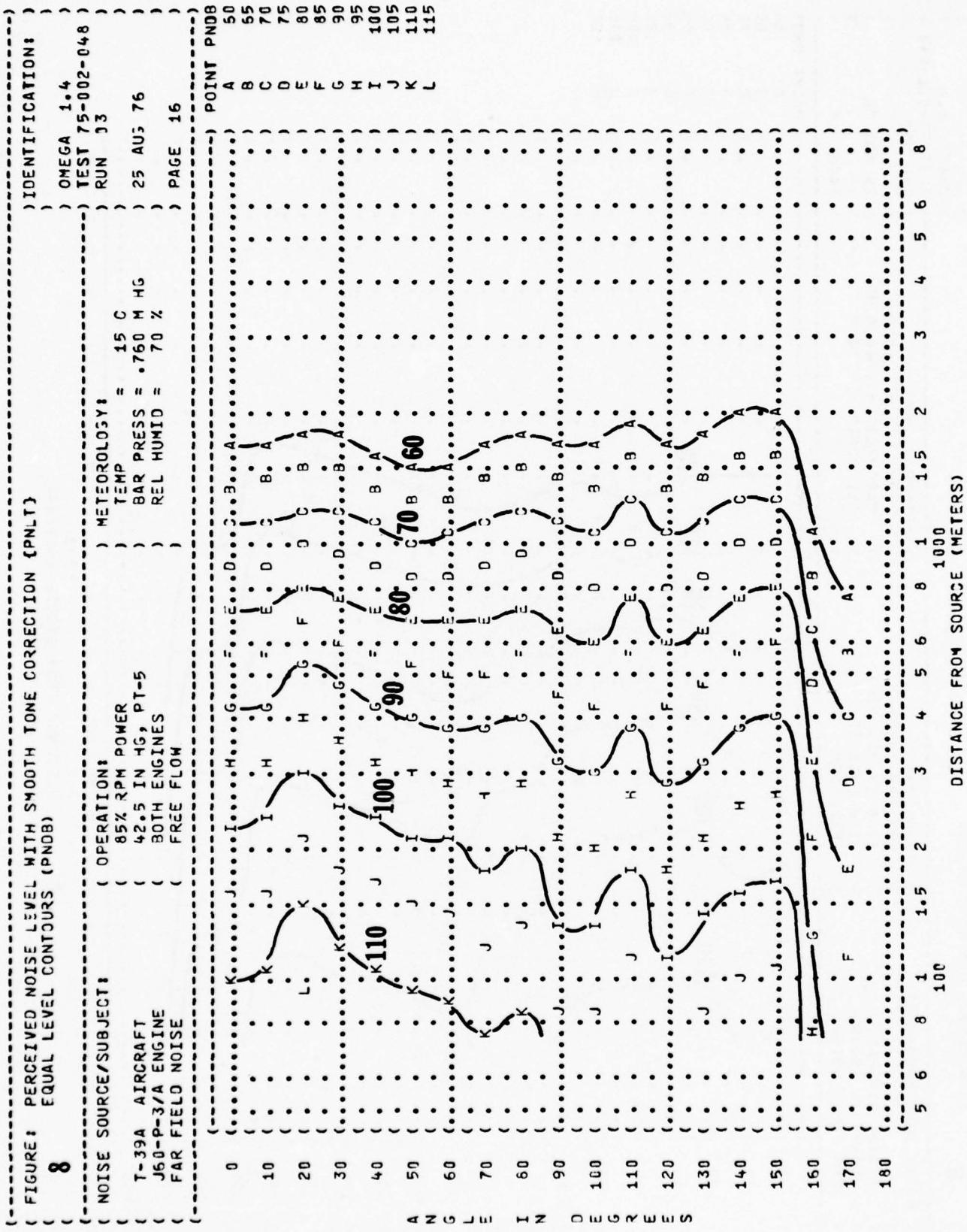


FIGURE: PERCEIVED NOISE LEVEL - WITH SMOOTH TONE CORRECTION (PNLT)
8 EQUAL LEVEL CONTOURS (PNDB)

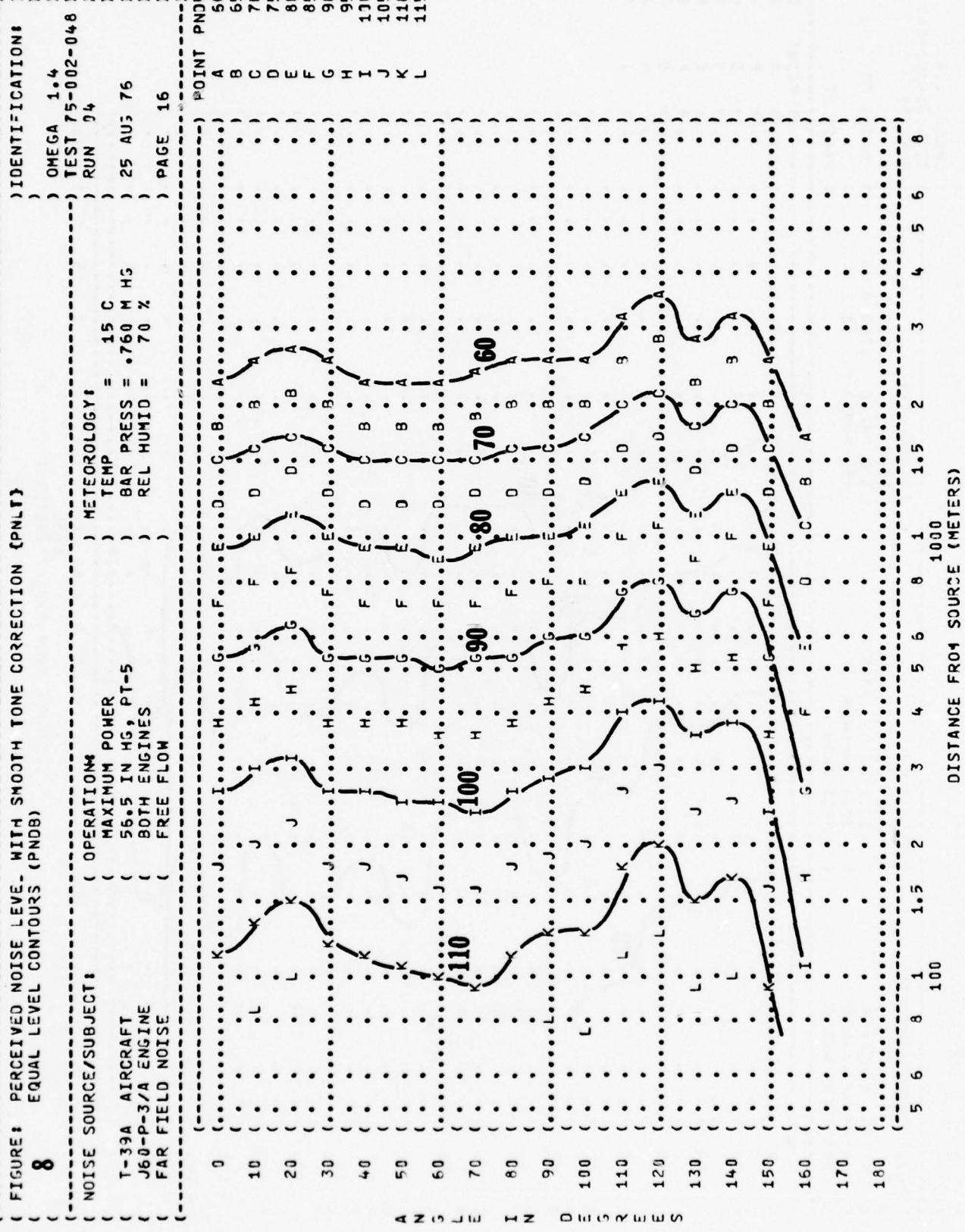


FIGURE 1 PREFERRED SPEECH INTERFERENCE LEVEL (PSIL)
9 EQUAL LEVEL CONTOURS (DB)

NOISE SOURCE/SUBJECT: T-39A AIRCRAFT
J60-P-3/A ENGINE
FAR FIELD NOISE

OPERATION: IDLE POWER
30.0 IN HG, PT-5
BOT-4 ENGINES
FREE FLOW

METEOROLOGY: TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

TEST 75-002-048
RUN 31
PAGE 17

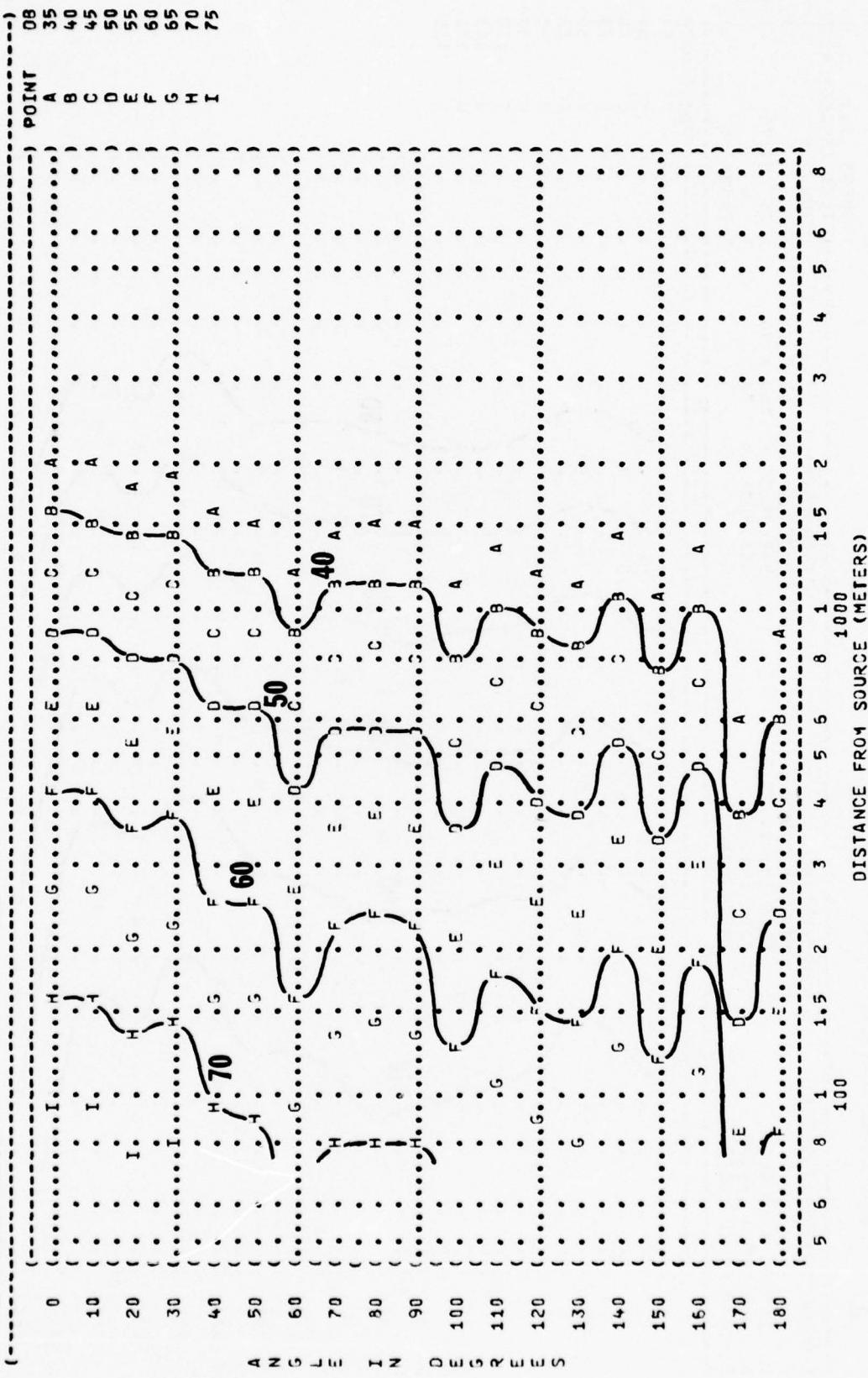


FIGURE 1 PREFERRED SPEECH INTERFERENCE LEVEL (PSIL)
9
 EQUAL LEVEL CONTOURS (DB)

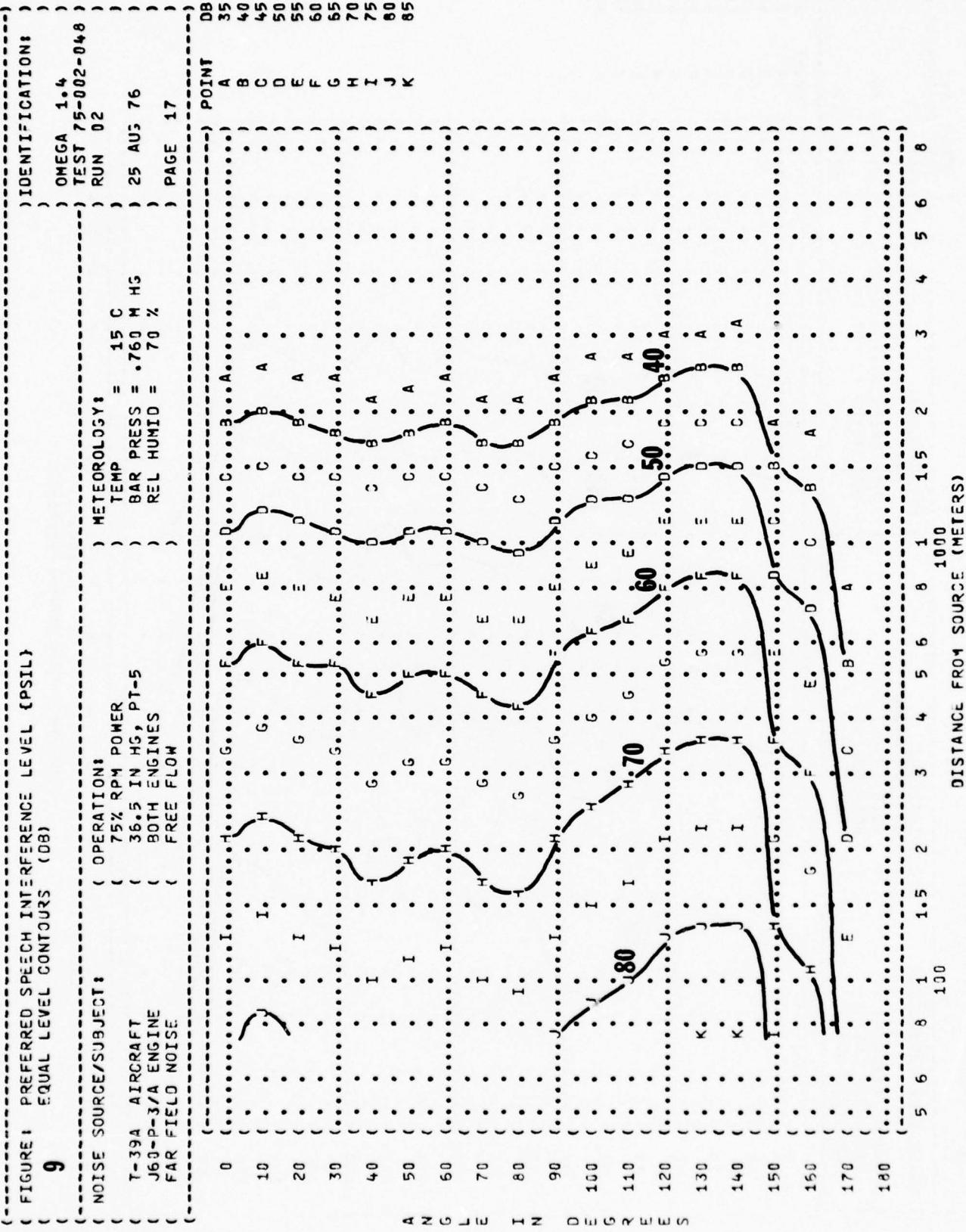


FIGURE 9 PREFERRED SPEECH INTERFERENCE LEVEL (PSIL)
EQUAL LEVEL CONTOURS (DB)

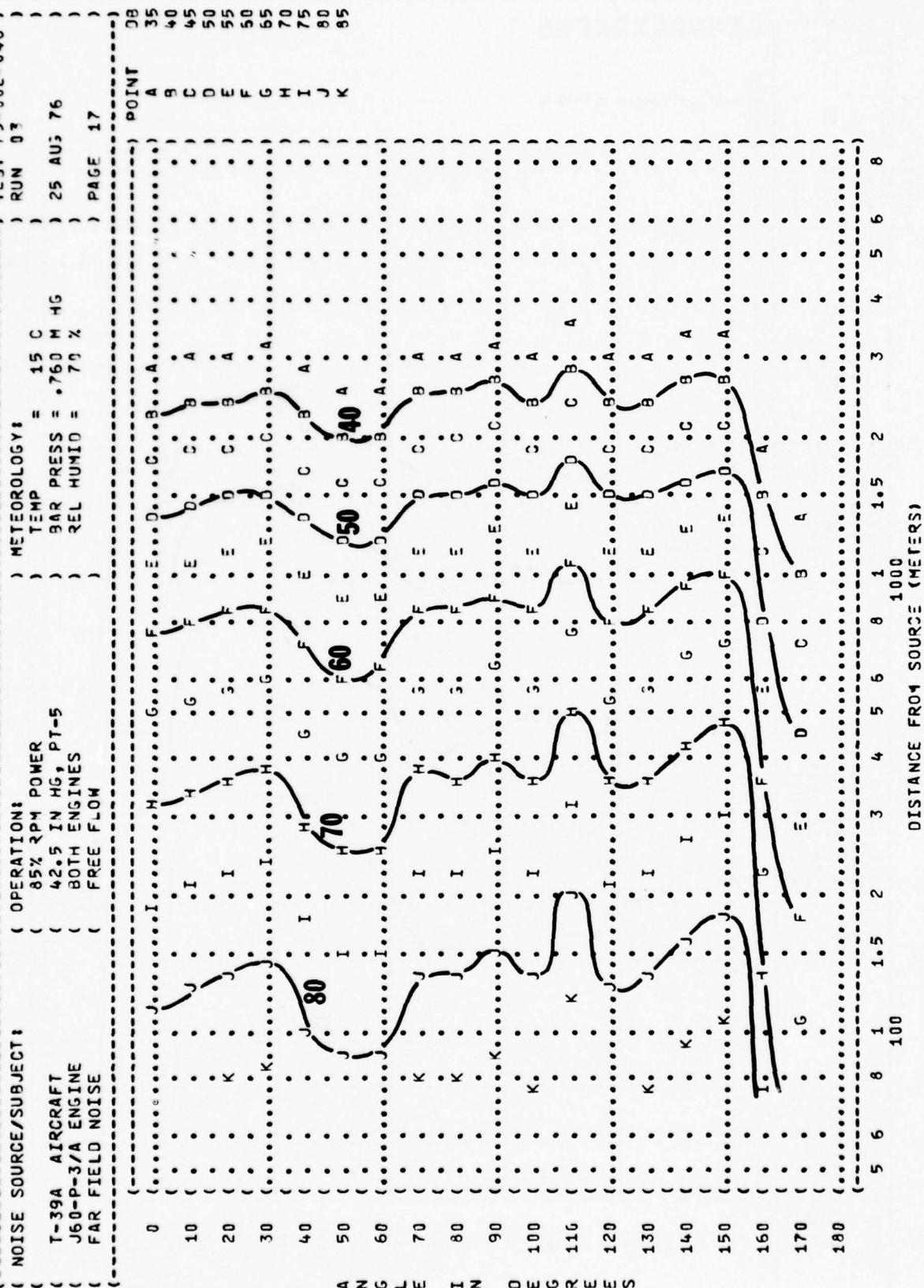


FIGURE: PREFERRED SPEECH INTERFERENCE LEVEL (PSIL)
9
 EQUAL LEVEL CONTOURS (DB)

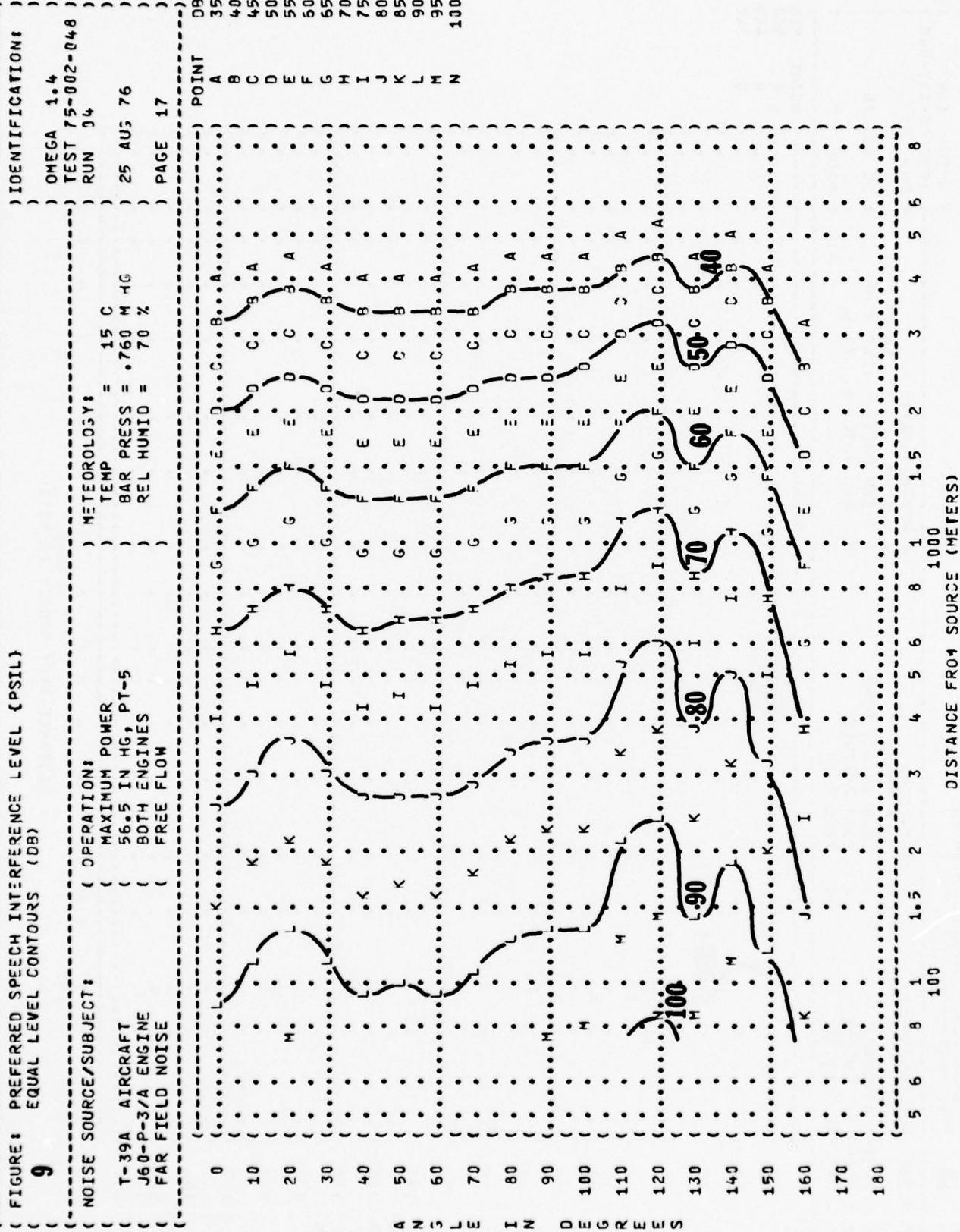


FIGURE: MAXIMUM PERMISSIBLE TIME (T) FOR ONE EXPOSURE PER DAY (AFR 161-35, JULY 73)
 EQUAL TIME CONTOURS (MINUTES)
 NO PROTECTION

10

NOISE SOURCE/SUBJECT:

T-39A AIRCRAFT
 J60-P-3/A ENGINE
 FAR FIELD NOISE

OPERATION:

IDLE POWER
 30° IN HG, PT-5
 BOTH ENGINES
 FREE FLOW

IDENTIFICATION:

OMEGA 1.4

TEST 75-002-048

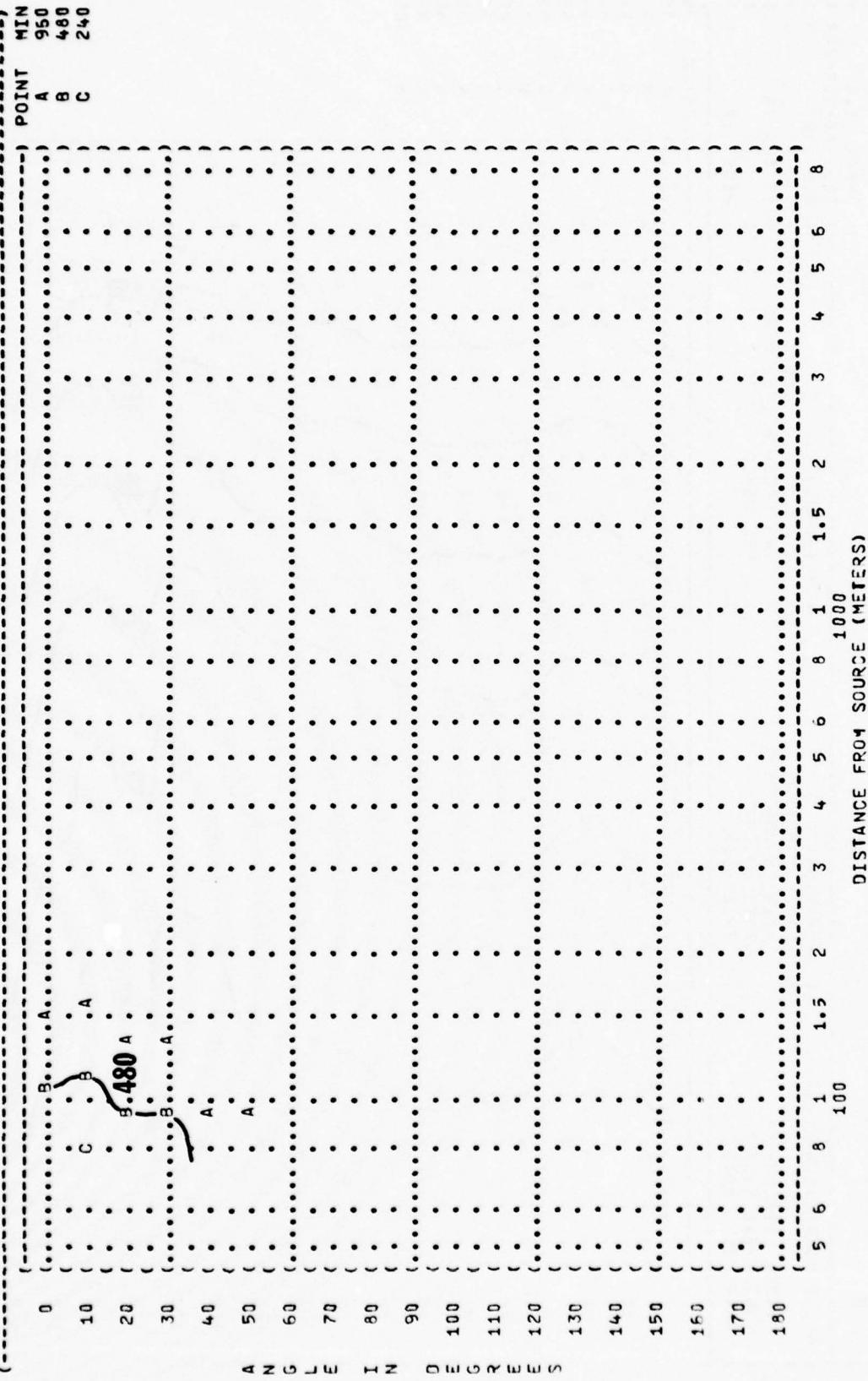
RUN 01

METEOROLOGY:

TEMP = 15 C
 BAR PRESS = .760 M HG
 REL HUMID = 70 %

PAGE:

7



DISTANCE FROM SOURCE (METERS)

100

5

6

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10

12

14

16

18

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28

30

32

34

36

38

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42

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164

480 A

(FIGURE: MAXIMUM PERMISSIBLE TIME (T) FOR ONE EXPOSURE PER DAY (AFR 161-35, JULY 73)
 (EQUAL TIME CONTOURS (MINUTES)
10

0 < (-----)

10 < (-----)

20 < (-----)

30 < (-----)

40 < (-----)

A 50 < (-----)

N 60 < (-----)

G 70 < (-----)

L 80 < (-----)

E 90 < (-----)

D 100 < (-----)

S 110 < (-----)

R 120 < (-----)

E 130 < (-----)

I 140 < (-----)

150 < (-----)

160 < (-----)

170 < (-----)

180 < (-----)

NOISE SOURCE/SUBJECT: (OPERATION:
 (AIRCRAFT (IDLE POWER
 (J60-P-3/A ENGINE (30.0 IN HG, PT-5
 (FAR FIELD NOISE (BOTH ENGINES
 (FREE FLOW (-----)

METEOROLOGY:
 (TEMP = 15 C
 (BAR PRESS = .760 M HG
 (REL HUMID = 70 %
 (-----)

TEST 75-002-046
) RUN 01
) OMEGA 1.4
) PAGE 8
 (-----)

PERSONNEL MAY BE EXPOSED UP TO 960 MINUTES PER DAY
 AT ALL DISTANCES FROM SOURCE EQUAL TO OR GREATER THAN 75 METERS
 FOR ALL ANGLES EVALUATED (INDICATED BY < AT LEFT)
 UNDER THE FOLLOWING EAR PROTECTION CONDITIONS:

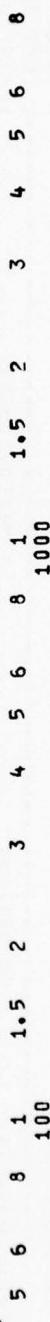
MINIMUM QPL EAR MUFFS

AMERICAN OPTICAL 1700 EAR MUFFS

V-51R EAR PLUGS

COMFIT TRIPLE FLANGE EAR P-UGS

H-133 GROUND COMMUNICATION UNIT



DISTANCE FROM SOURCE (METERS)

10

FIGURE: MAXIMUM PERMISSIBLE TIME (T) FOR ONE EXPOSURE PER DAY (AFR 161-35, JULY 73)
EQUAL TIME CONTOURS (MINUTES)
NO PROTECTION

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-048
RUN 32

NOISE SOURCE/SUBJECT:

T-39A AIRCRAFT
J60-P-3/A ENGINE
FAR FIELD NOISE

OPERATION:

75% RPM POWER
36.5 IN HG, PT-5
BOTH ENGINES
FREE FLOW

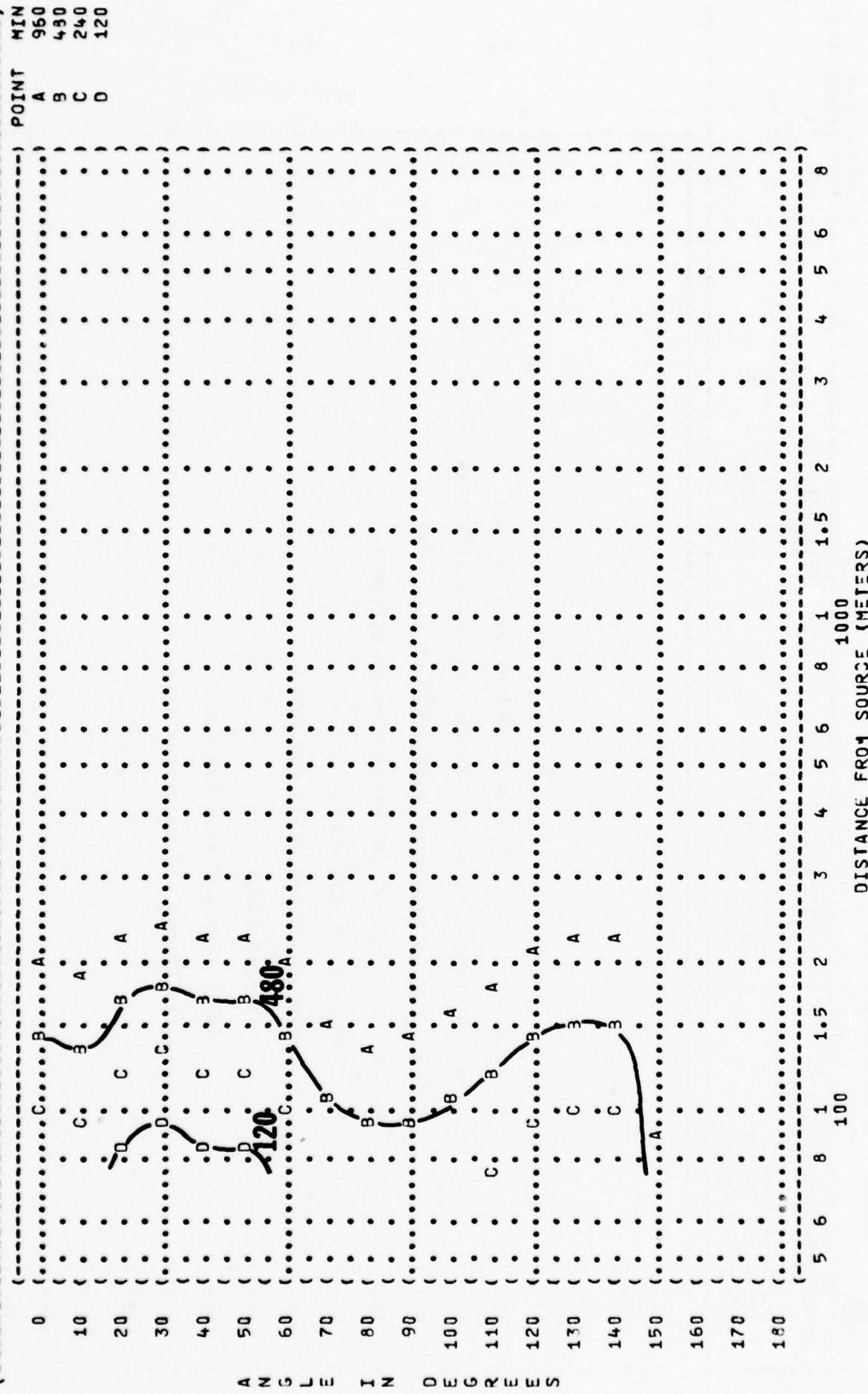
METEOROLOGY:

TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

TEST 75-002-048

RUN 32

PAGE 7



10

FIGURE: MAXIMUM PERMISSIBLE TIME (T) FOR ONE EXPOSURE PER DAY (AFR 161-35, JULY 73)
EQUAL TIME CONTOURS (MINUTES)

NOISE SOURCE/SUBJECT: T-39A AIRCRAFT
J60-P-3/A ENGINE
FAR FIELD NOISE

OPERATION: 75% RPM POWER
36.5 IN HG, PT-5
BOTH ENGINES
FREE FLOW

0<

10<

20<

30<

40<

50<

60<

70<

80<

N

90<

O

100<

S

R

E

120<

E

S

130<

E

140<

S

R

E

S

150<

160<

170<

180<

PERSONNEL MAY BE EXPOSED UP TO 360 MINUTES PER DAY

AT ALL DISTANCES FROM SOURCE EQUAL TO OR GREATER THAN 75 METERS

FOR ALL ANGLES EVALUATED (INDICATED BY < AT LEFT)

UNDER THE FOLLOWING EAR PROTECTION CONDITIONS:

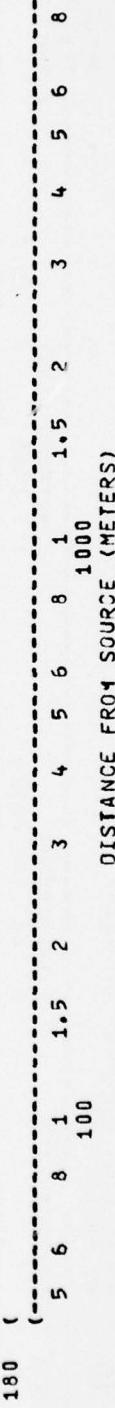
MINIMUM QPL EAR MUFFS

AMERICAN OPTICAL 1700 EAR MUFFS

V-51R EAR PLUGS

COMFIT TRIPLE FLANGE EAR PUGGS

H-133 GROUND COMMUNICATION UNIT



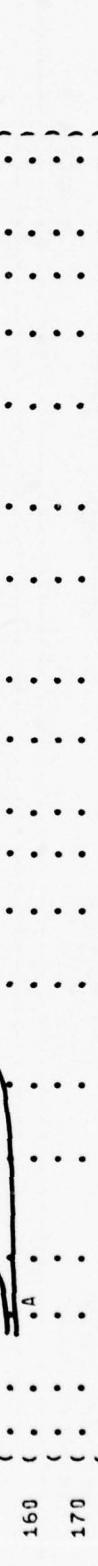
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MAXIMUM PERMISSIBLE TIME (T) FOR ONE EXPOSURE PER DAY (AFR 161-35, JULY 73)
EQUAL TIME CONTOURS (MINUTES)
NO PROTECTION

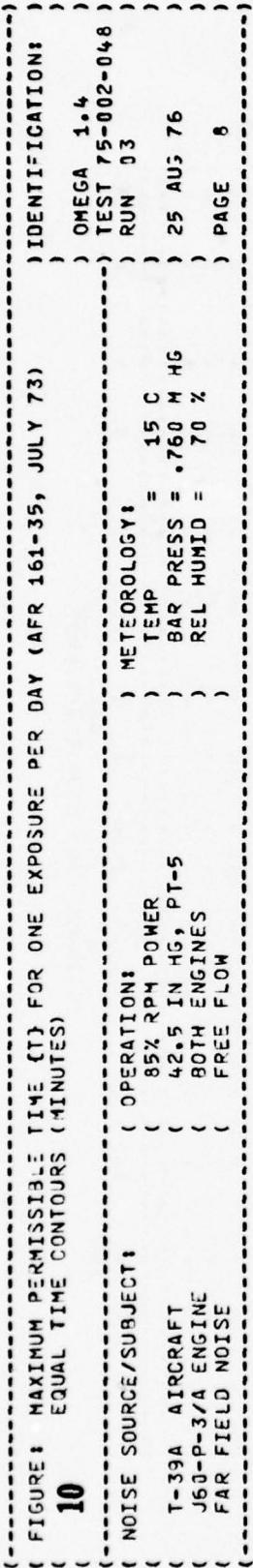
FIGURE 8 IDENTIFICATION:
NOISE SOURCE/SUBJECT: T-39A AIRCRAFT
J60-P-3/A ENGINE
FAR FIELD NOISE
OPERATIONS: 85% RPM POWER
42.5 IN HG, PT-5
BOTH ENGINES
FREE FLOW

METEOROLOGY: TEMP = 15 C
BAR PRESS = 760 M HG
REL HUMID = 70 %
TEST 75-002-048
RUN 03
PAGE 7

POINT MIN
A 960
B 480
C 240
D 120
E 60



DISTANCE FROM SOURCE (METERS)



NOISE SOURCE/SUBJECT: (OPERATION:) METEOROLOGY:) IDENTIFICATION:

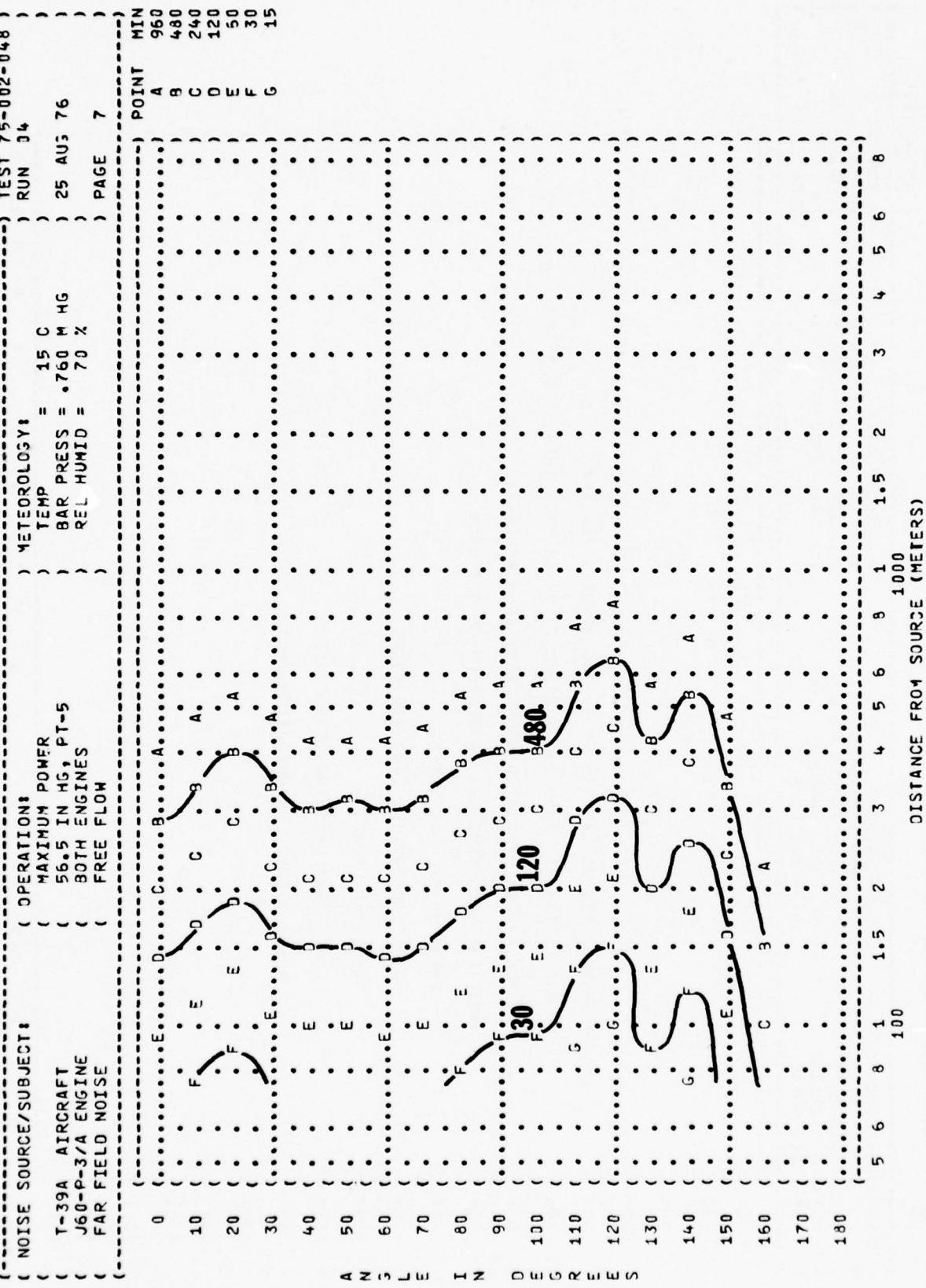
T-39A AIRCRAFT (85% RPM POWER) TEMP = 15 C) OMEGA 1-4
 J60-P-3/A ENGINE (42.5 IN HG, PT-5) BAR PRESS = .760 M HG) TEST 75-002-048
 FAR FIELD NOISE (BOTH ENGINES) REL HUMID = 70 %) PAGE 8
 (FREE FLOW)

PERSONNEL MAY BE EXPOSED UP TO 360 MINUTES PER DAY
 AT ALL DISTANCES FROM SOURCE EQUAL TO OR GREATER THAN 75 METERS
 FOR ALL ANGLES EVALUATED (INDICATED BY < AT LEFT)
 UNDER THE FOLLOWING EAR PROTECTION CONDITIONS:

MINIMUM QPL EAR MUFFS
 AMERICAN OPTICAL 1700 EAR MUFFS
 V-51R EAR PLUGS
 COMFIT TRIPLE FLANGE EAR PLUGS
 H-133 GROUND COMMUNICATION UNIT

5 6 8 1 1.5 2 3 4 5 6 8 1 1.5 2 3 4 5 6 8
 DISTANCE FROM SOURCE (METERS)

FIGURE: MAXIMUM PERMISSIBLE TIME (T) FOR ONE EXPOSURE PER DAY (AFR 161-35, JULY 73)
 10 EQUAL TIME CONTOURS (MINUTES)
 NO PROTECTION



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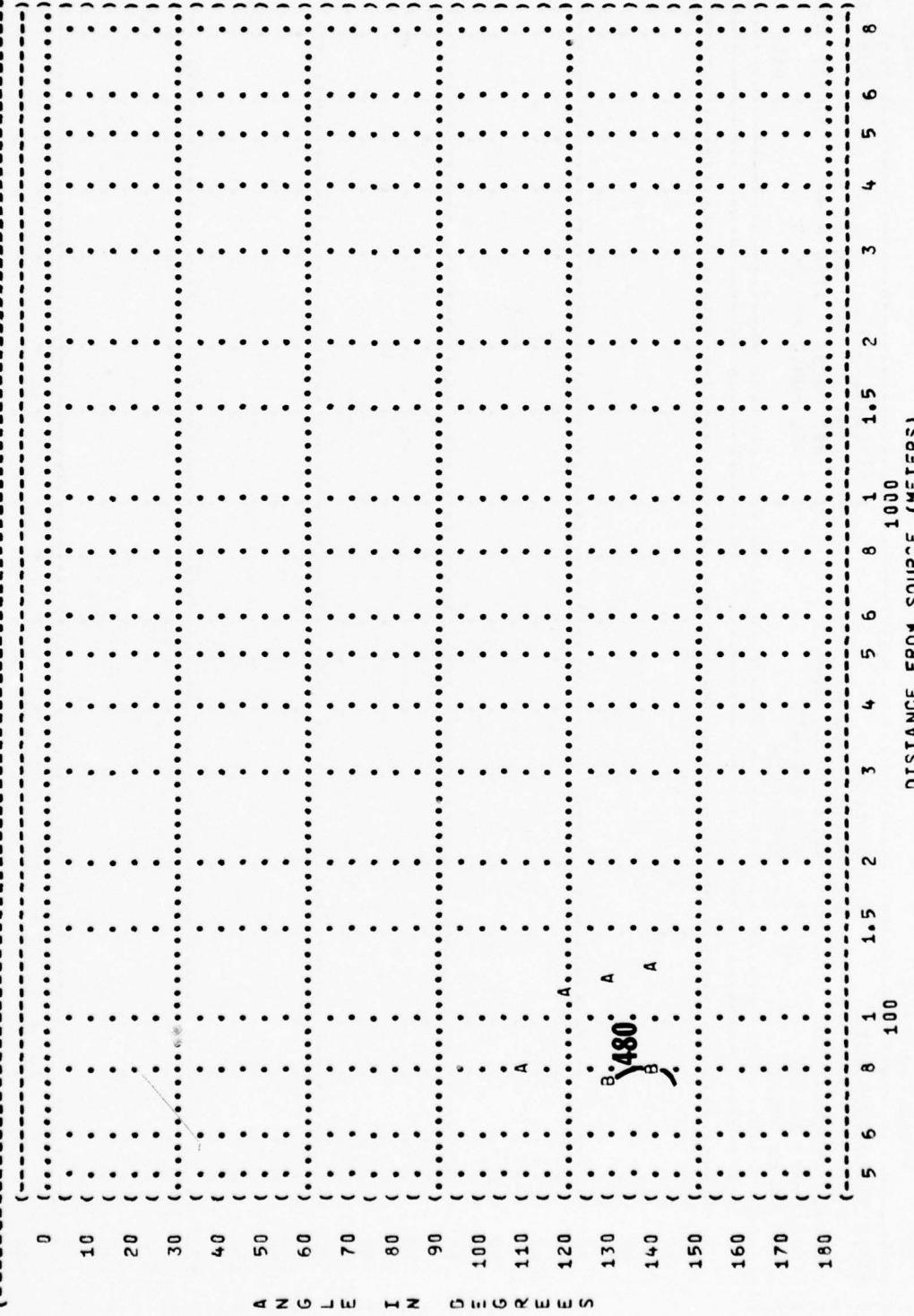
( FIGURE : MAXIMUM PERMISSIBLE TIME (T) FOR ONE EXPOSURE PER DAY (AFR 161-35, JULY 73) ) IDENTIFICATION:
( EQUAL TIME CONTOURS (MINUTES) ) )
( 10 MINIMUM QPL EAR MUFFS ) )

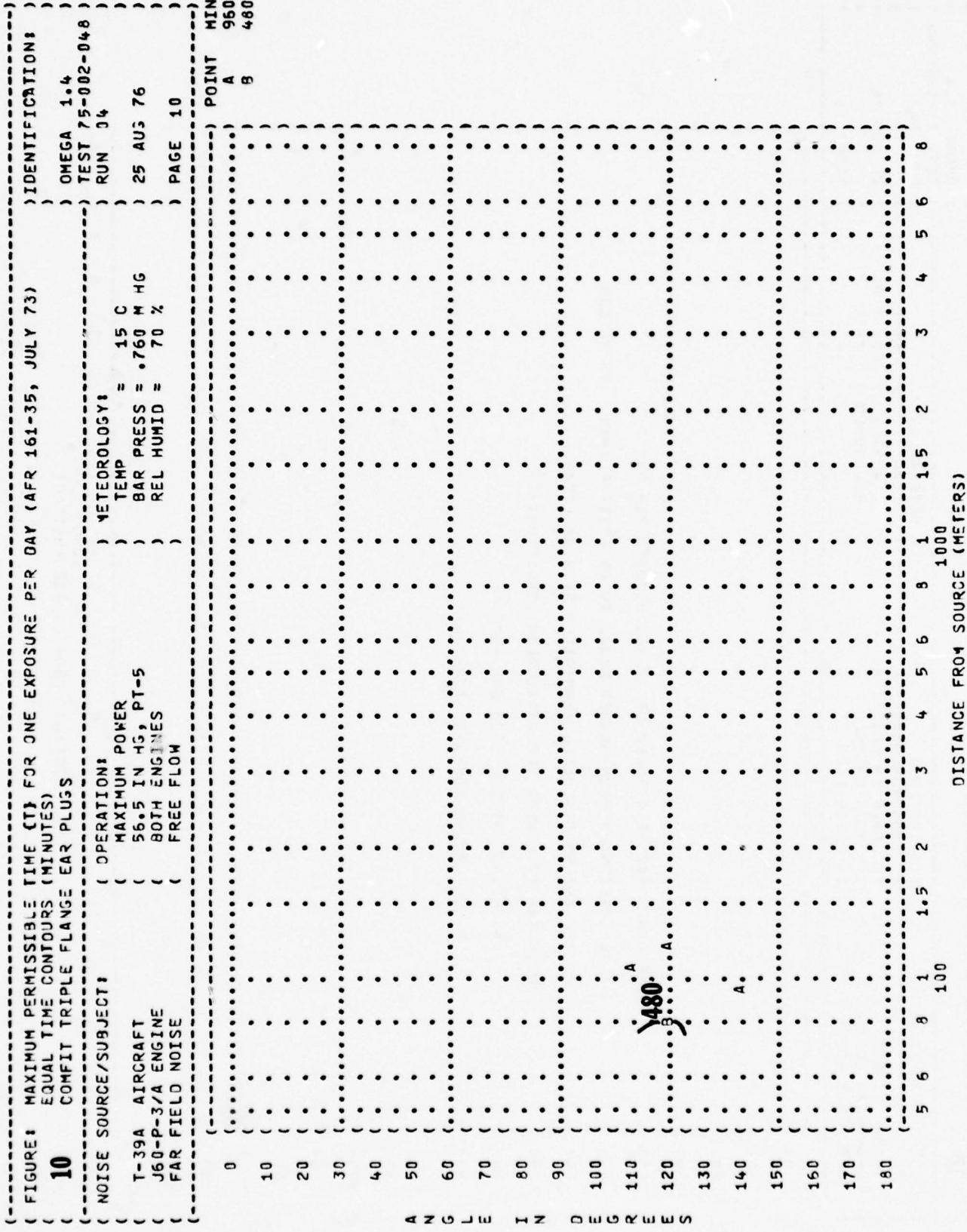
( NOISE SOURCE/SUBJECT: ) OPERATION!
( ) MAXIMUM POWER ) TEMP = 15 C
( ) 56.5 IN HG, PT-5 ) BAR PRESS = .760 HG
( ) BOTH ENGINES ) REL HUMID = 70 %
( ) FREE FLOW ) PAGE 8

( ) METEOROLOGY:
( ) RUN 34

( ) POINT MIN
( ) A 960
( ) A 480
( ) A 460

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{ FIGURE: MAXIMUM PERMISSIBLE TIME (T) FOR ONE EXPOSURE PER DAY (AFR 161-35, JULY 73)) IDENTIFICATION:)

10

{ NOISE SOURCE/SUBJECT:)

{ T-39A AIRCRAFT
{ J60-P-3/A ENGINE
{ FAR FIELD NOISE

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{ OPERATIONS:) METEOROLOGY:)

{ MAXIMUM POWER) TEMP = 15 C
(56.5 IN 1G, PT-5) BAR PRESS = 760 MM HG
(BOTH ENGINES) REL HUMID = 70 %
(FREE FLOW) PAGE 11

{

PERSONNE- MAY BE EXPOSED UP TO 360 MINUTES PER DAY
AT ALL DISTANCES FROM SOURCE EQUAL TO OR GREATER THAN 75 METERS
FOR ALL ANGLES EVALUATED (INDICATED BY < AT LEFT)
UNDER THE FOLLOWING EAR PROTECTION CONDITIONS:
I 80< AMERICAN OPTICAL 1700 EAR PUFFS
N 90< H-133 GROUND COMMUNICATION UNIT

5 6 8 1 1.5 2 3 4 5 6 8 1 1.5 2 3 4 5 6 8
100 1000 DISTANCE FROM SOURCE (METERS)

(FIGURE: SOUND PRESSURE LEVEL (SPL)
 EQUAL LEVEL CONTOURS (DB)
11
 31.5 Hz OCTAVE BAND)

) IDENTIFICATION:
) OMEGA 1.4
) TEST 75-002-048
) RUN 01

(NOISE SOURCE/SUBJECT:

(T-39A AIRCRAFT

(J60-P-3/A ENGINE

(FAR FIELD NOISE

(OPERATION:

(IDLE POWER

(30.0 IN HG, PT-5

(BOTH ENGINES

(FREE FLOW

) METEOROLOGY:

(TEMP = 15 C

(BAR PRESS = .760 M Hg

(REL HUMID = 70 %

) PAGE 16

) POINT DB

(A 35

(B 40

(C 45

(D 50

(E 55

(F 60

(G 65

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FIGURE: SOUND PRESSURE LEVEL (SPL)
11 EQUAL LEVEL CONTOURS (DB)
6.3 Hz OCTAVE BAND

NOISE SOURCE/SUBJECT:

T-39A AIRCRAFT
J60-P-3/A ENGINE
FAR FIELD NOISE

OPERATION:
IDLE POWER
30.0 IN HG, PT-5
BOTH ENGINES
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-048
RUN 01

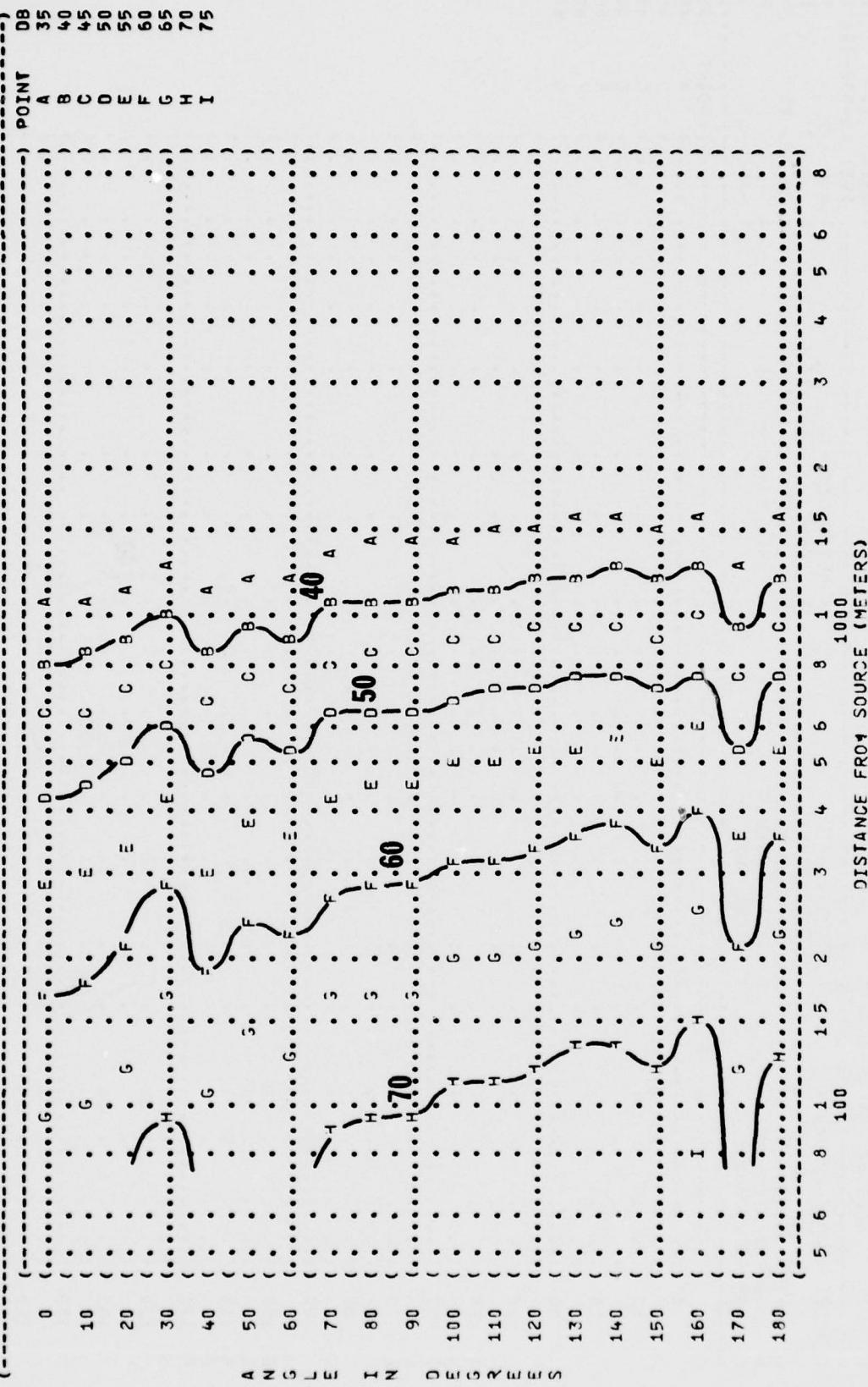


FIGURE 11 SOUND PRESSURE LEVEL [SPL]
EQUAL LEVEL CONTOURS (DB)
125 Hz OCTAVE BAND

11

NOISE SOURCE/SUBJECT:
T-39A AIRCRAFT
J60-P-3/A ENGINE
FAR FIELD NOISE

OPERATION:
IDLE POWER
30.0 IN HG, PT-5
BOTH ENGINES
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = 760 MM HG
REL. HUMID = 70 %

TEST 75-002-048
RUN 01
25 AUG 76
PAGE 20

IDENTIFICATION:

OMEGA 1.4

POINT DB
A 35
B 40
C 45
D 50
E 55
F 50
G 65
H 70
I 75

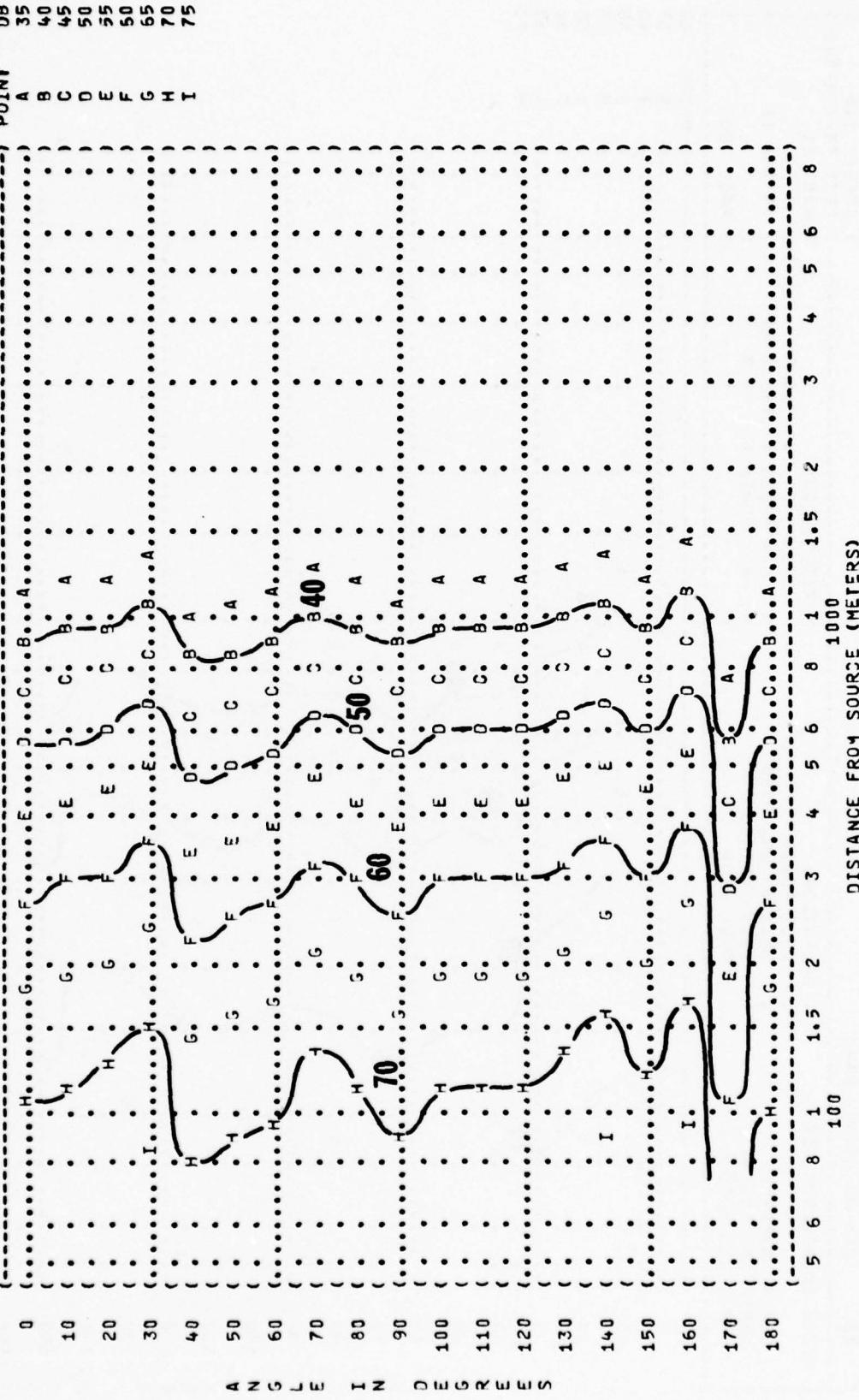


FIGURE: SOUND PRESSURE LEVEL (SPL)
EQUAL LEVEL CONTOURS (DB)
11
250 Hz OCTAVE BAND

NOISE SOURCE/SUBJECT:

T-39A AIRCRAFT
J60-P-3/A ENGINE
FAR FIELD NOISE

OPERATION:

IDLE POWER
30.0 IN HG, PT-5
BOTH ENGINES
FREE FLOW

METEOROLOGY:

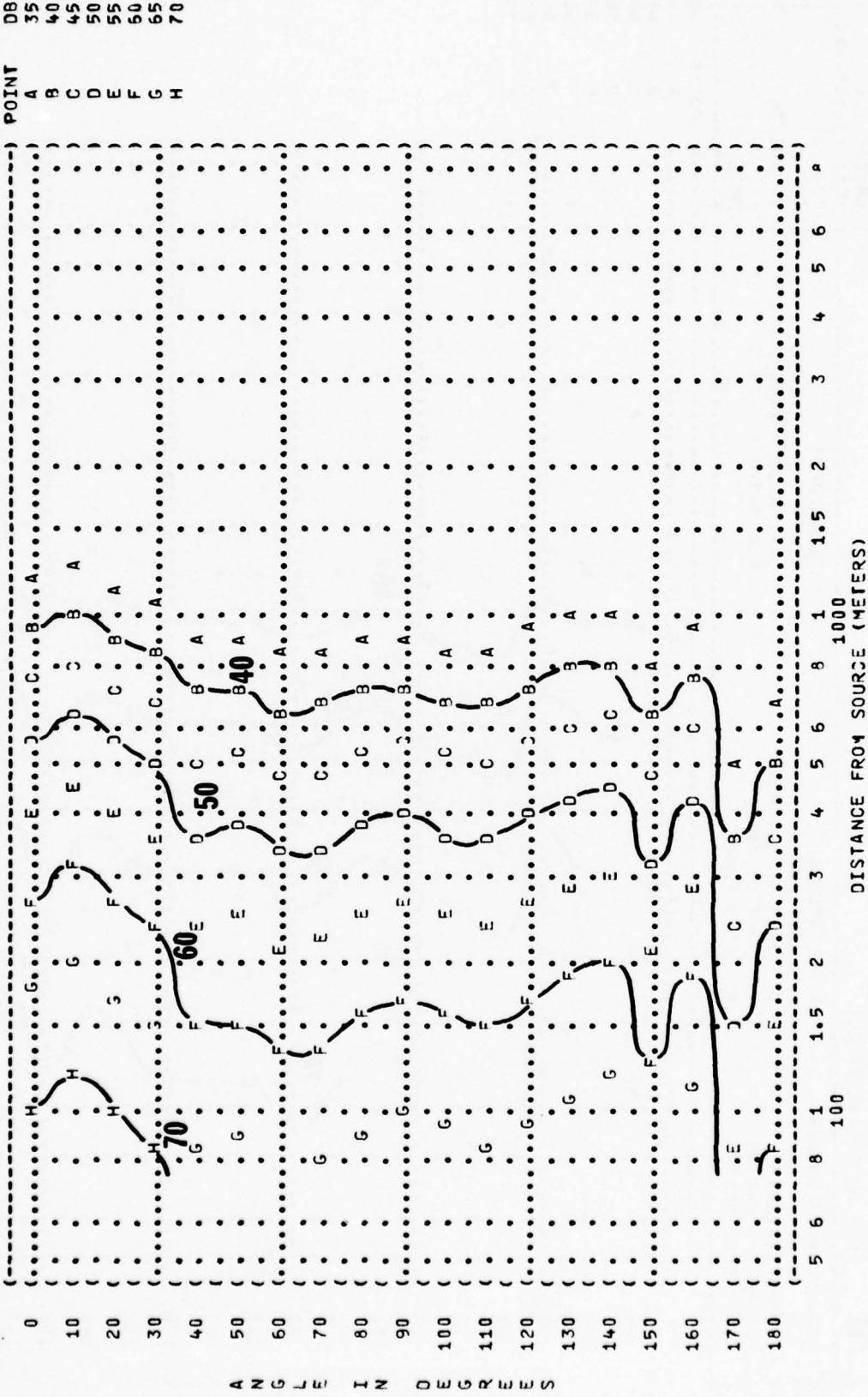
TEMP = 15 C
BAR PRESS = 760 M HG
REL HUMID = 70 %

IDENTIFICATION:

OMEGA 1.4
TEST 75-002-048
RUN 31

PAGE:

21



DISTANCE FROM SOURCE (METERS)

1000

FIGURE: SOUND PRESSURE LEVEL (SPL)
11 EQUAL LEVEL CONTOURS (DB)
 500 Hz OCTAVE BAND

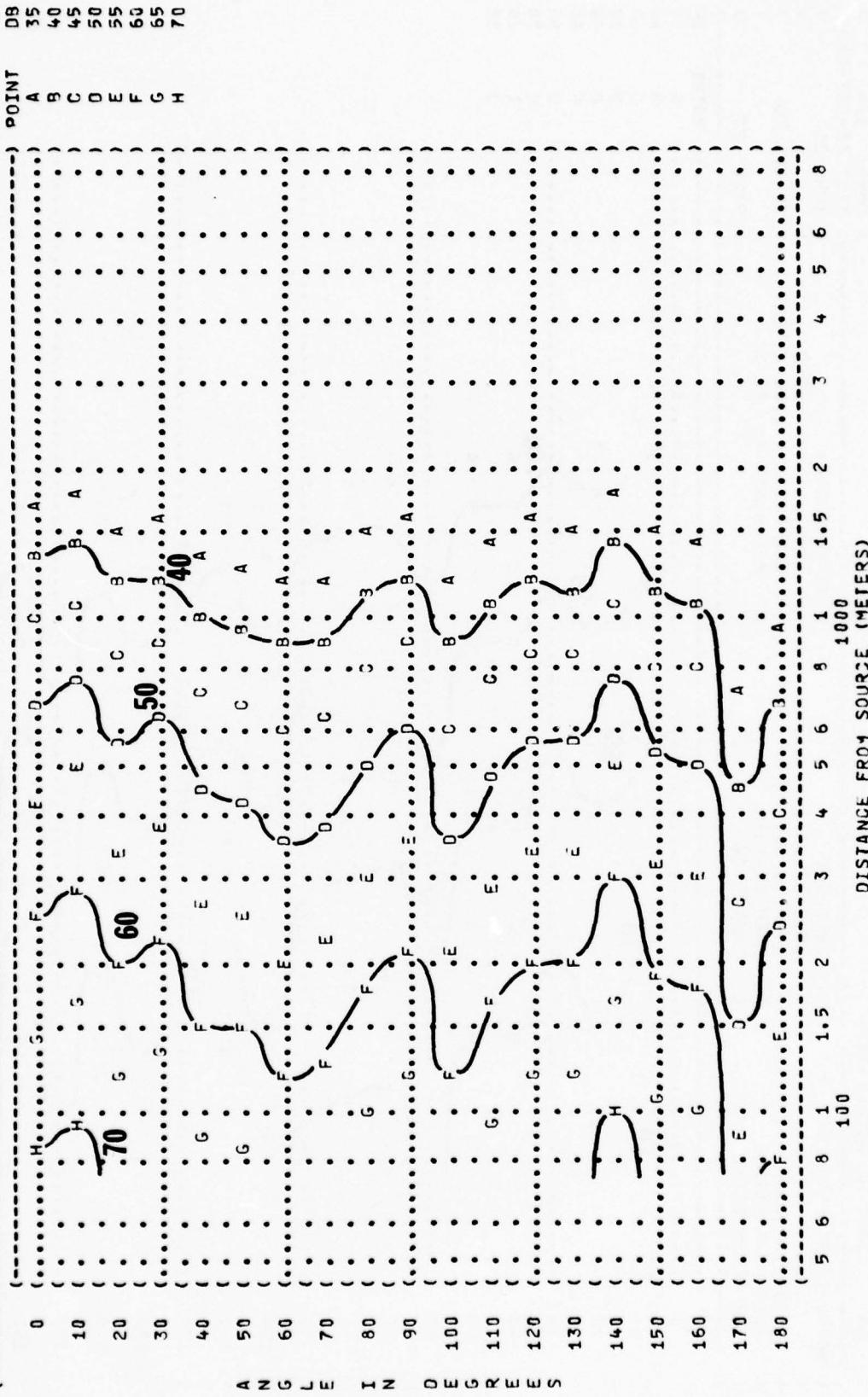
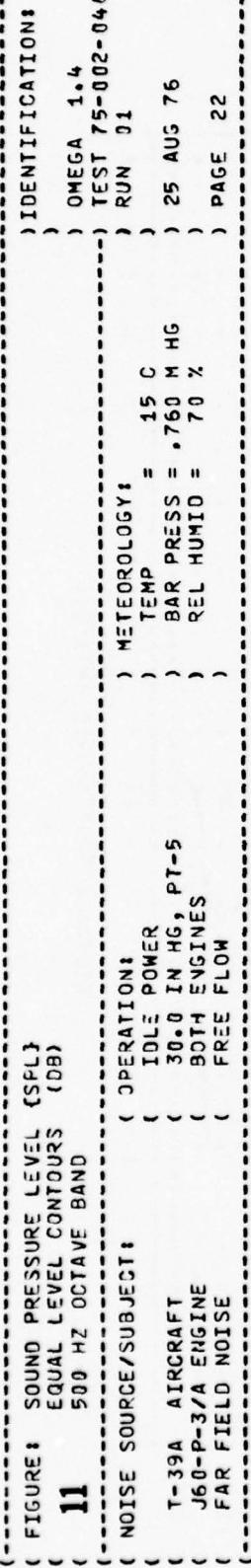


FIGURE: SOUND PRESSURE LEVEL [SPL]
11
 EQUAL LEVEL CONTOURS (DB)
 1000 HZ OCTAVE BAND

NOISE SOURCE/SUBJECT:

T-39A AIRCRAFT
 J60-P-3/A ENGINE
 FAR FIELD NOISE
 FREE FLOW

OPERATION:

IDLE POWER
 30.0 IN HG, PT-5
 BOTH ENGINES
 FREE FLOW

RUN 01

TEST 75-002-048

25 AUG 76

PAGE 23

METEOROLOGY:

TEMP = 15 C
 BAR PRESS = .760 M HG
 REL HUMID = 70 %

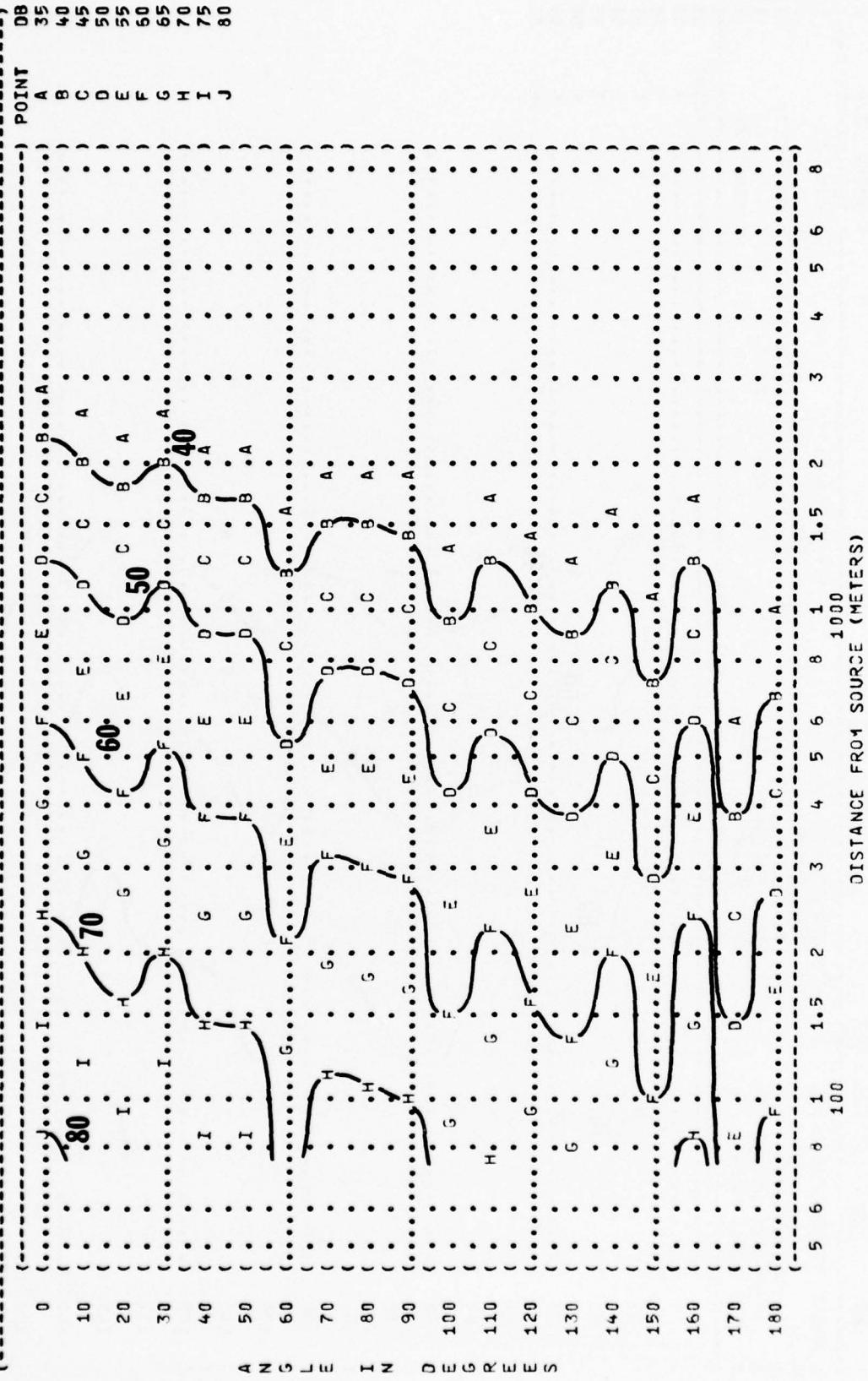


FIGURE: SOUND PRESSURE LEVEL [SPL]
EQUAL LEVEL CONTOURS (DB)
11
2000 HZ OCTAVE BAND

NOISE SOURCE/SUBJECT:
T-39A AIRCRAFT
J60-P-3/A ENGINE
FAR FIELD NOISE

OPERATION:
IDLE POWER
30.0 IN HG, PT-5
BOTH ENGINES
FREE FLOW

METEOROLOGY:
TEMP = 15°C
BAR PRESS = 760 MM HG
REL HUMID = 70 %

RUN 01
TEST 75-002-048
25 AUG 76
PAGE 24

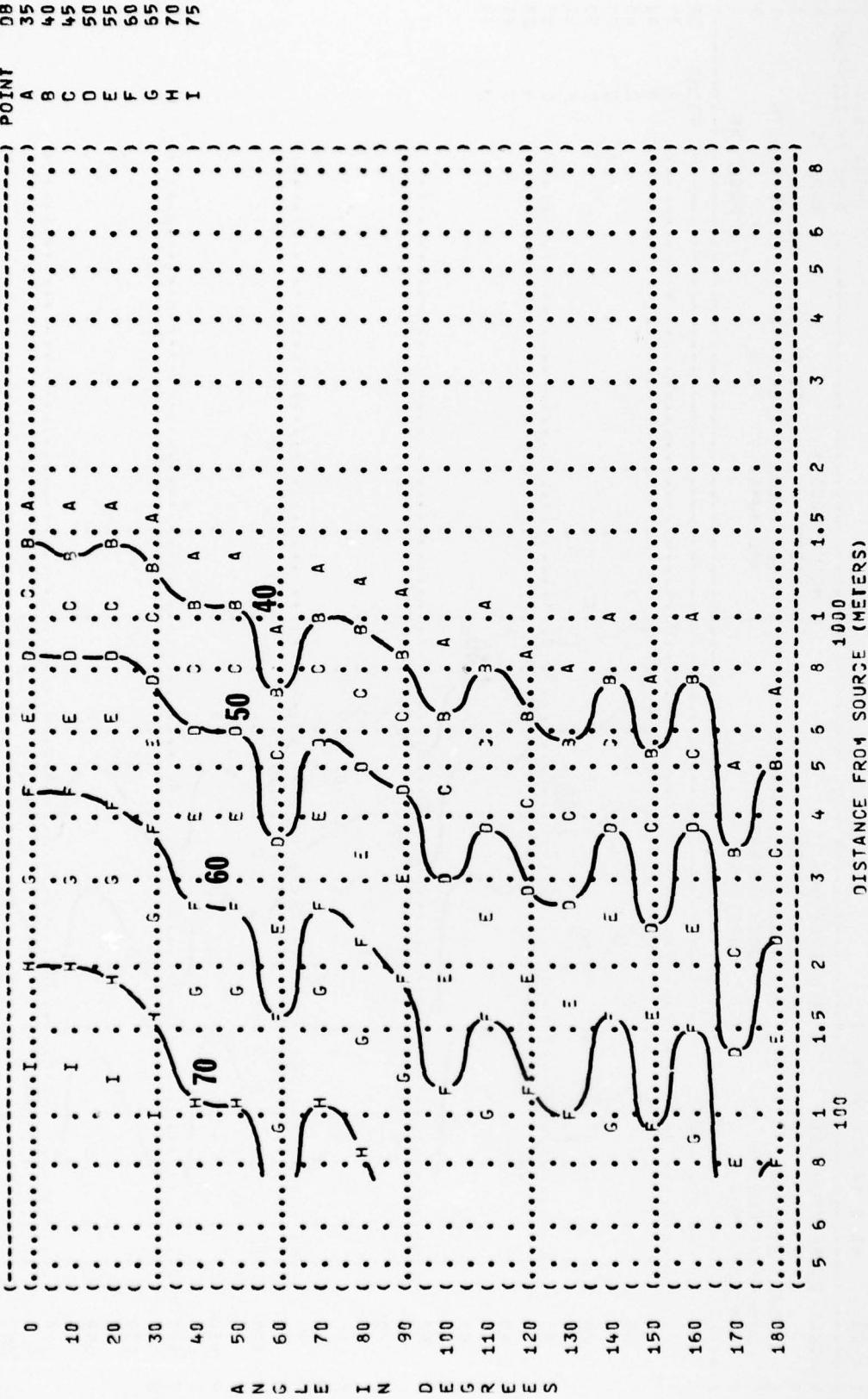


FIGURE: SOUND PRESSURE LEVEL (SPL)
EQUAL LEVEL CONTOURS (DB)
11
4000 HZ OCTAVE BAND

NOISE SOURCE/SUBJECT:

T-39A AIRCRAFT
J60-P-3/A ENGINE
FAR FIELD NOISE

OPERATION:
IDLE POWER
30.0 IN HG, PT-5
BOTH ENGINES
FREE FLOW

TEST 75-002-048
RUN 31

15 C
25 AUG 76

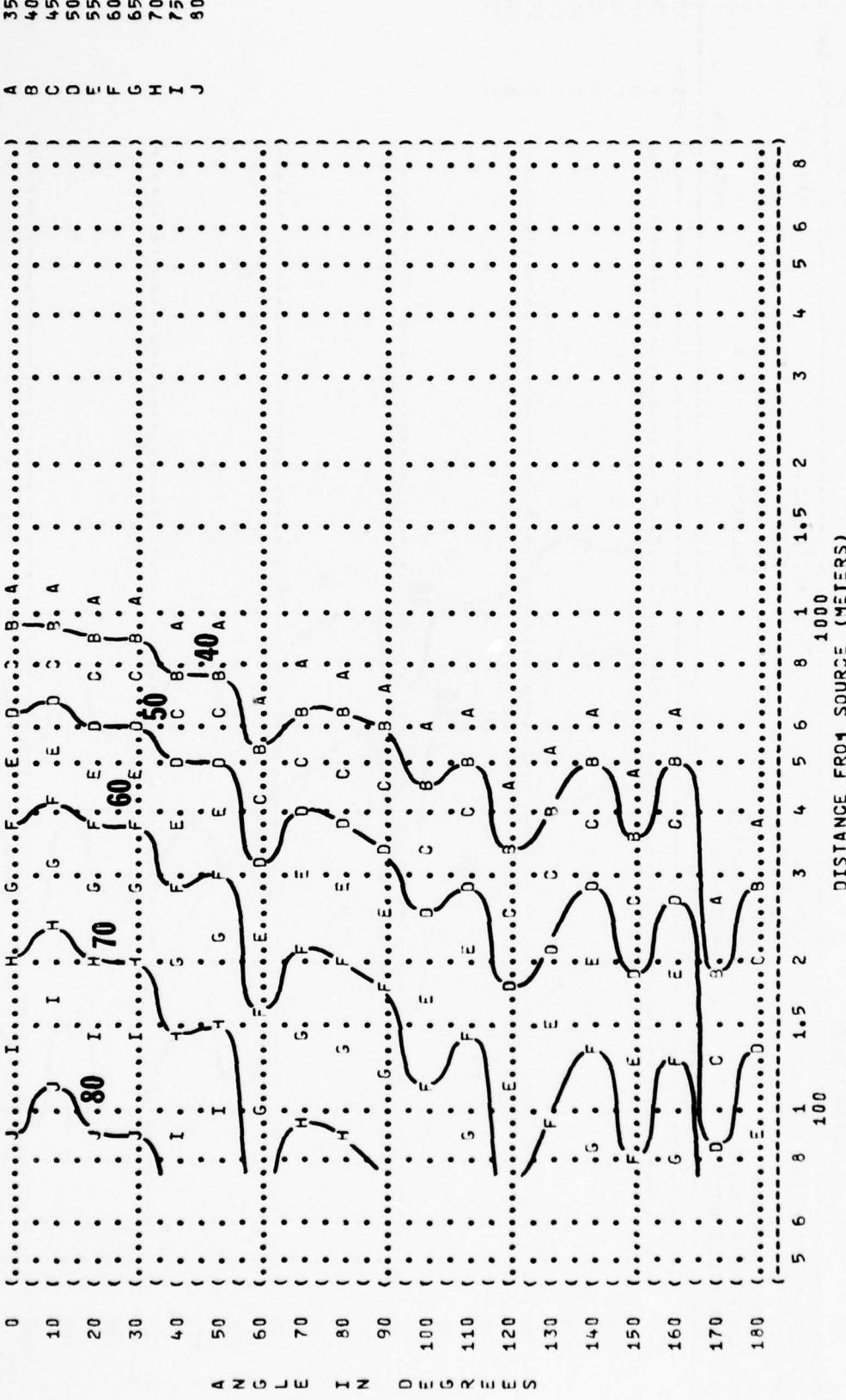
PAGE 25

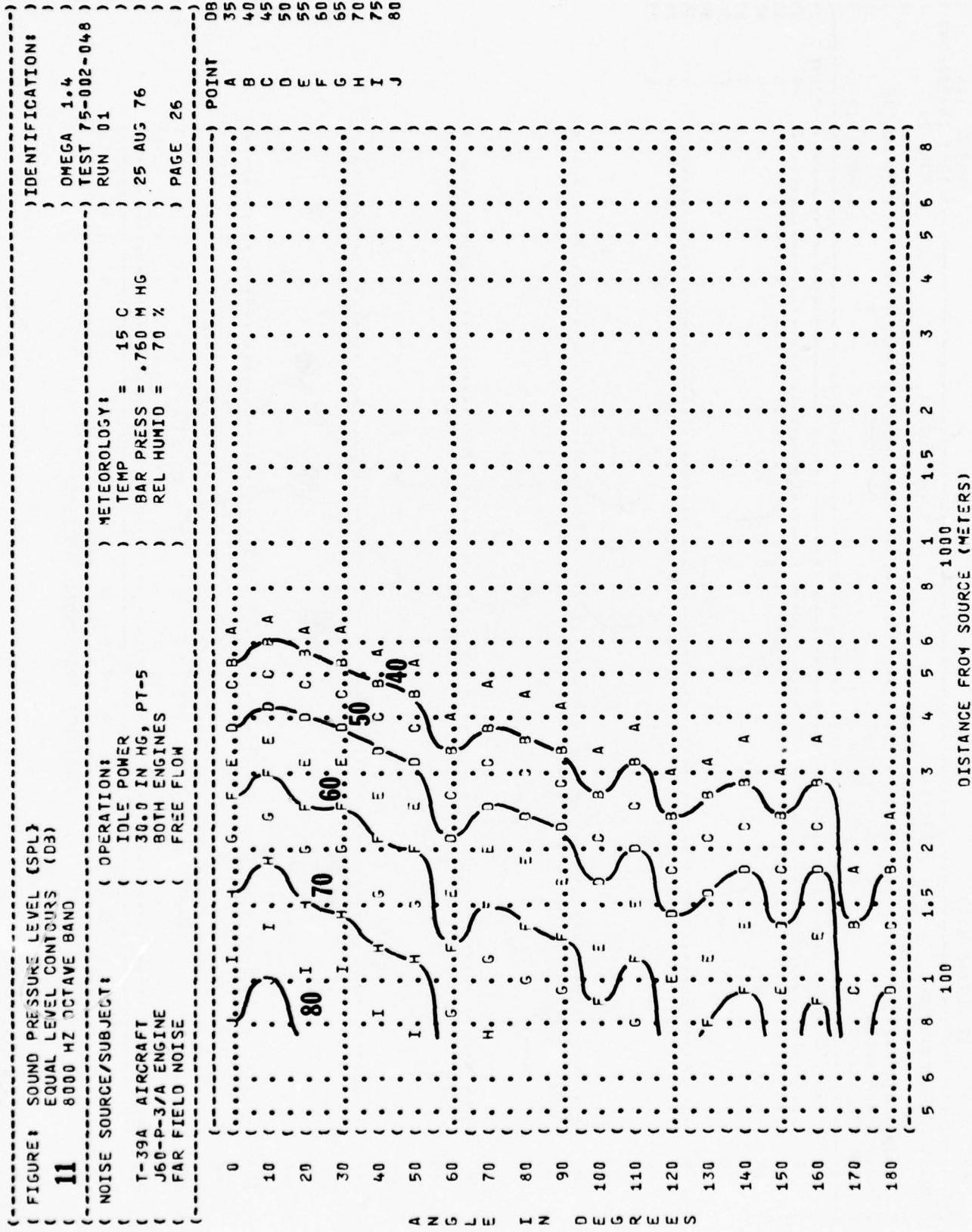
METEOROLOGY:
TEMP =
BAR PRESS =
REL HUMID =

70 %

70 %

POINT DB
A 35
B 40
C 45
D 50
E 55
F 60
G 65
H 70
I 75
J 80





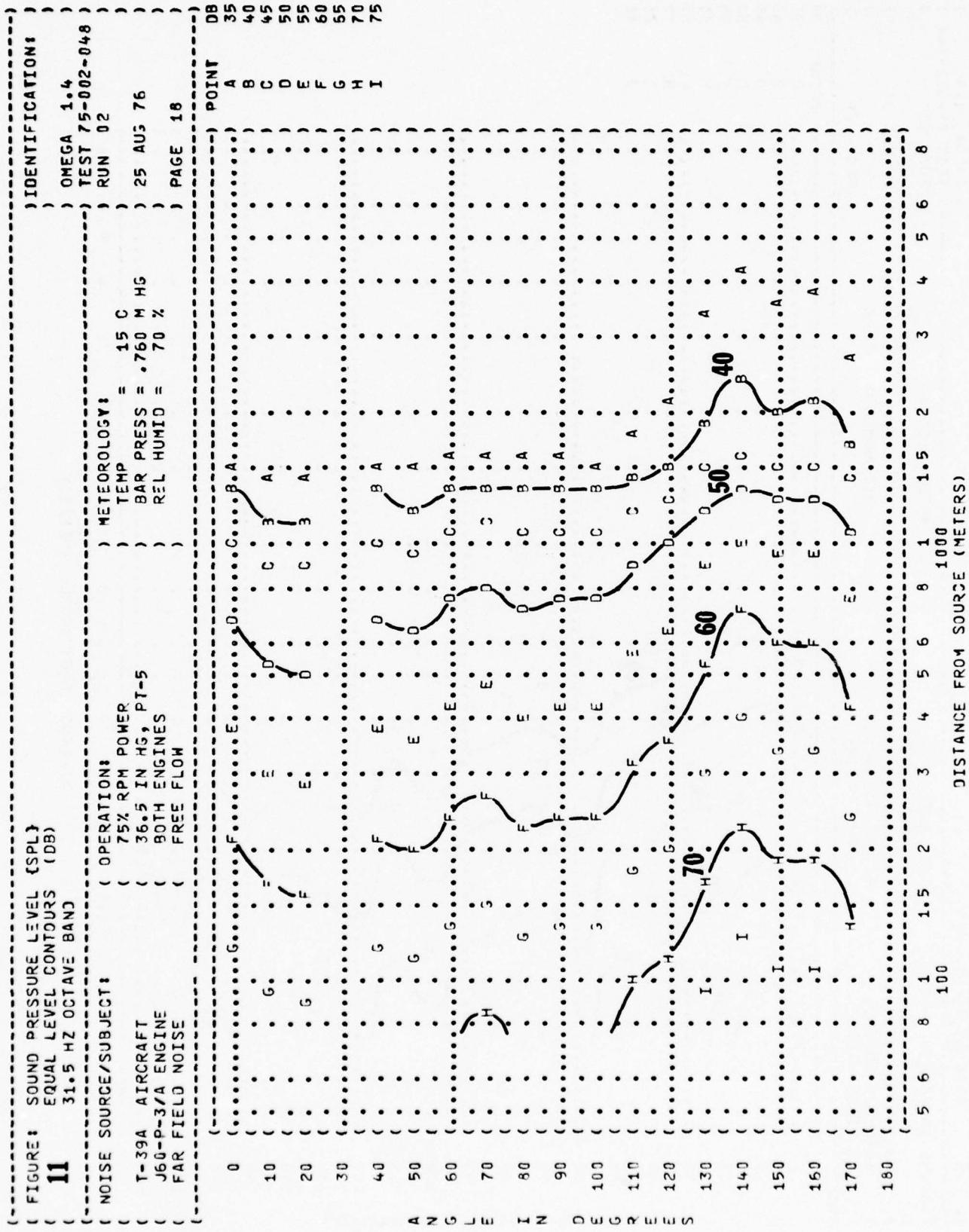


FIGURE: SOUND PRESSURE LEVEL (SPL)
11
 EQUAL LEVEL CONTOURS
 250 Hz OCTAVE BAND

NOISE SOURCE/SUBJECT:

T-39A AIRCRAFT
 J60-P-3/A ENGINE
 FAR FIELD NOISE

OPERATION:

75% RPM POWER
 36.5 IN HG, PT-5
 BOTH ENGINES
 FREE FLOW

METEOROLOGY:

TEMP = 15 C
 BAR PRESS = .760 M HG
 REL HUMID = 70 %

TEST 75-002-048
 RUN 02
 25 AUG 76
 PAGE 21

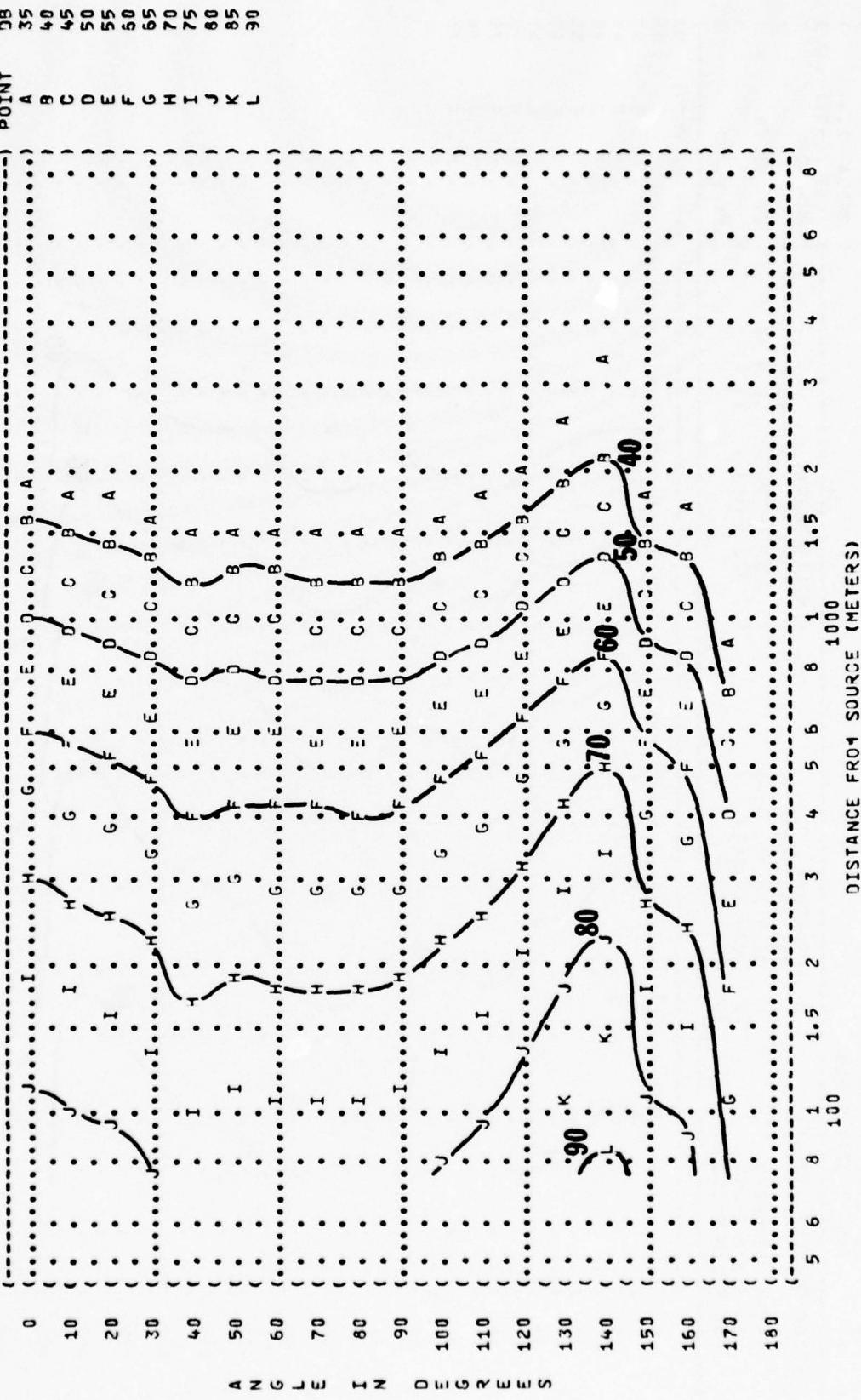


FIGURE: SOUND PRESSURE LEVEL (SPL)
11 EQUAL LEVEL CONTOURS (DB)
 500 Hz OCTAVE BAND

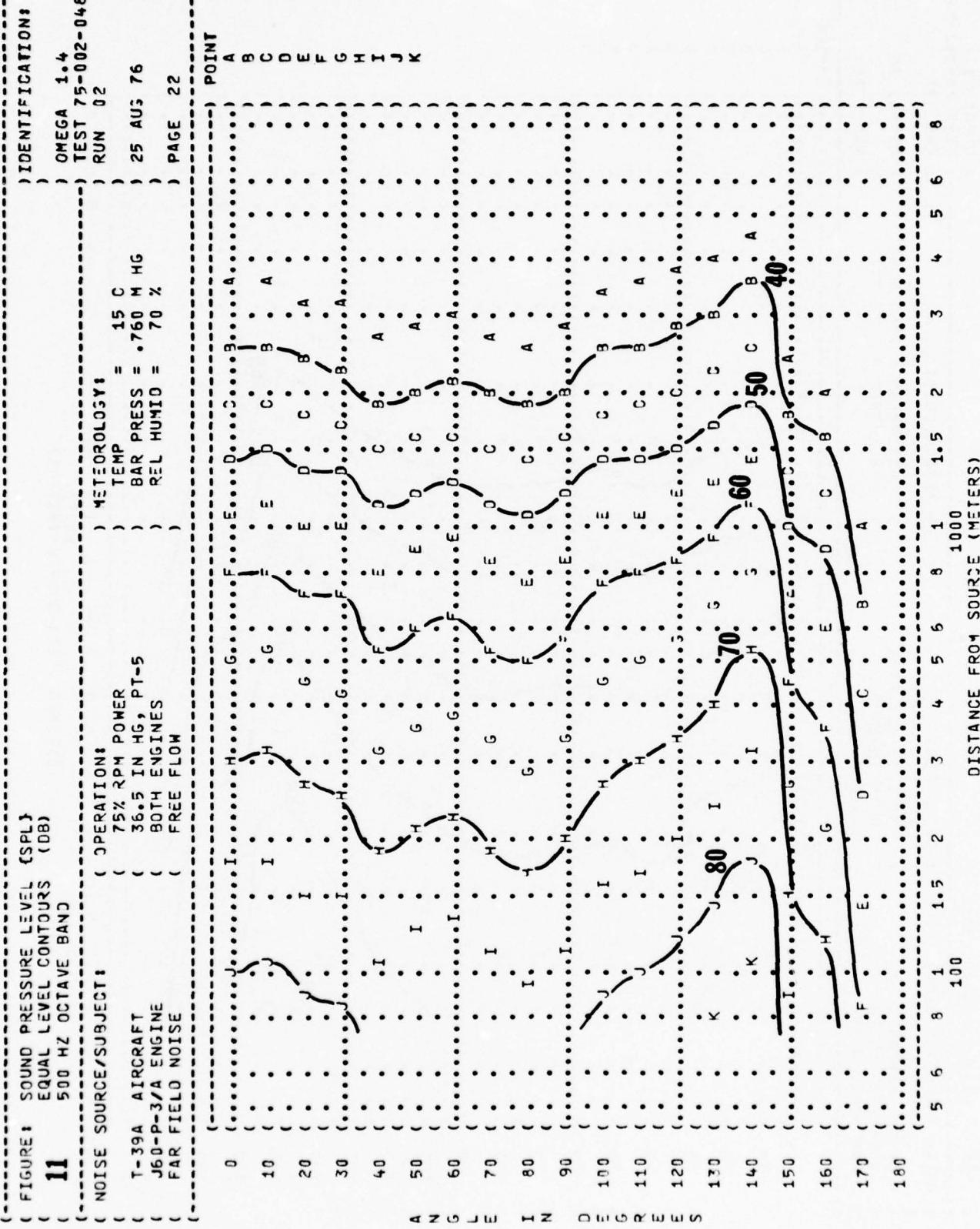


FIGURE: SOUND PRESSURE LEVEL (SPL)
11
 EQUAL LEVEL CONTOURS
 1000 HZ OCTAVE BAND

NOISE SOURCE/SUBJECT:

T-39A AIRCRAFT
 J60-P-3/A ENGINE
 FAR FIELD NOISE

OPERATIONS:
 75% RPM POWER
 36.5 IN HG, PT-5
 BOTH ENGINES
 FREE FLOW

METEOROLOGY:
 TEMP = 15 C
 BAR PRESS = .760 M HG
 REL HUMID = 70 %

RUN 02

TEST 75-002-046

PAGE 23

IDENTIFICATIONS:

OMEGA 1^{•4}

25 AUG 76

POINT DB

A 35

B 40

C 45

D 50

E 55

F 60

G 65

H 70

I 75

J 80

K 85

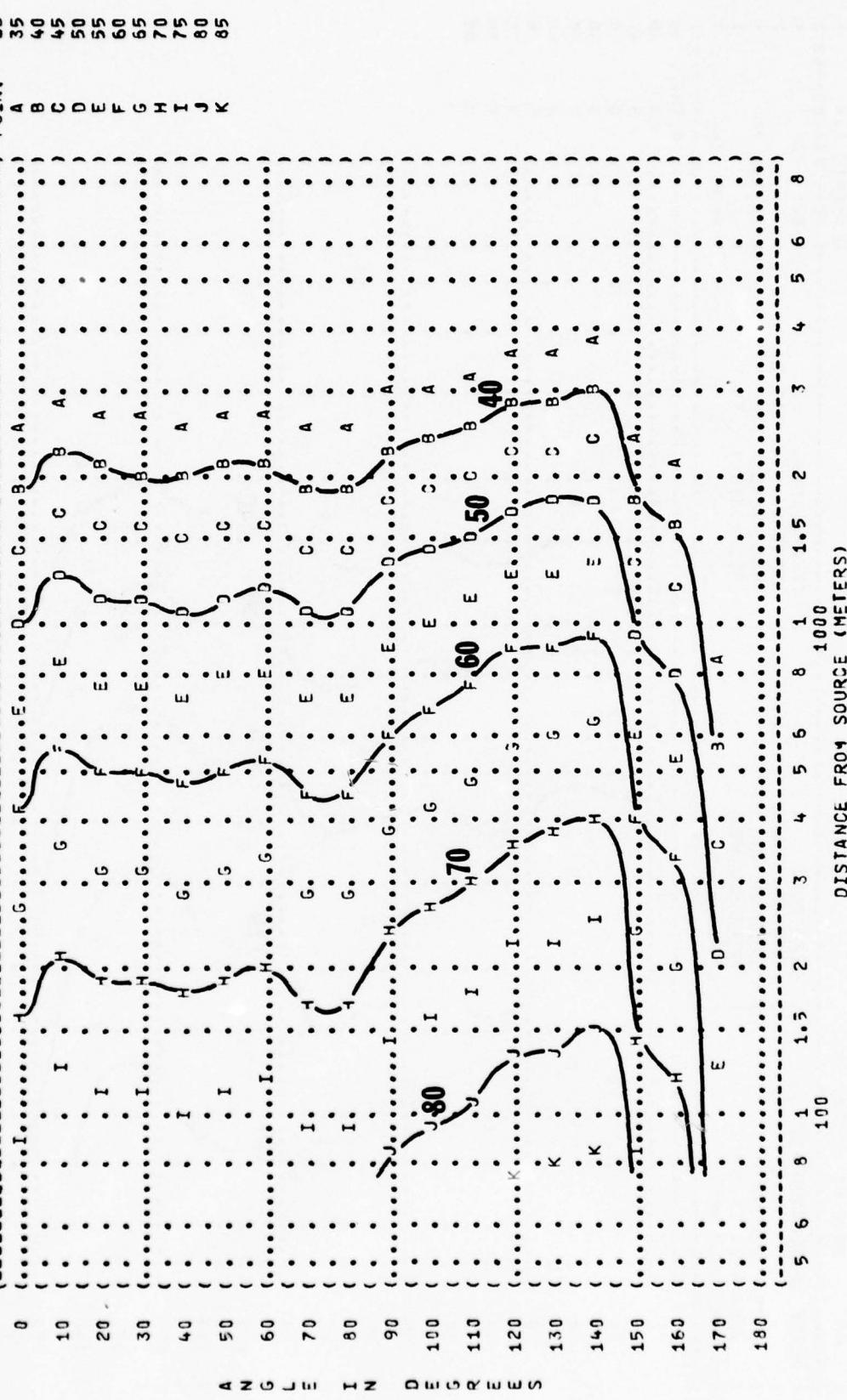
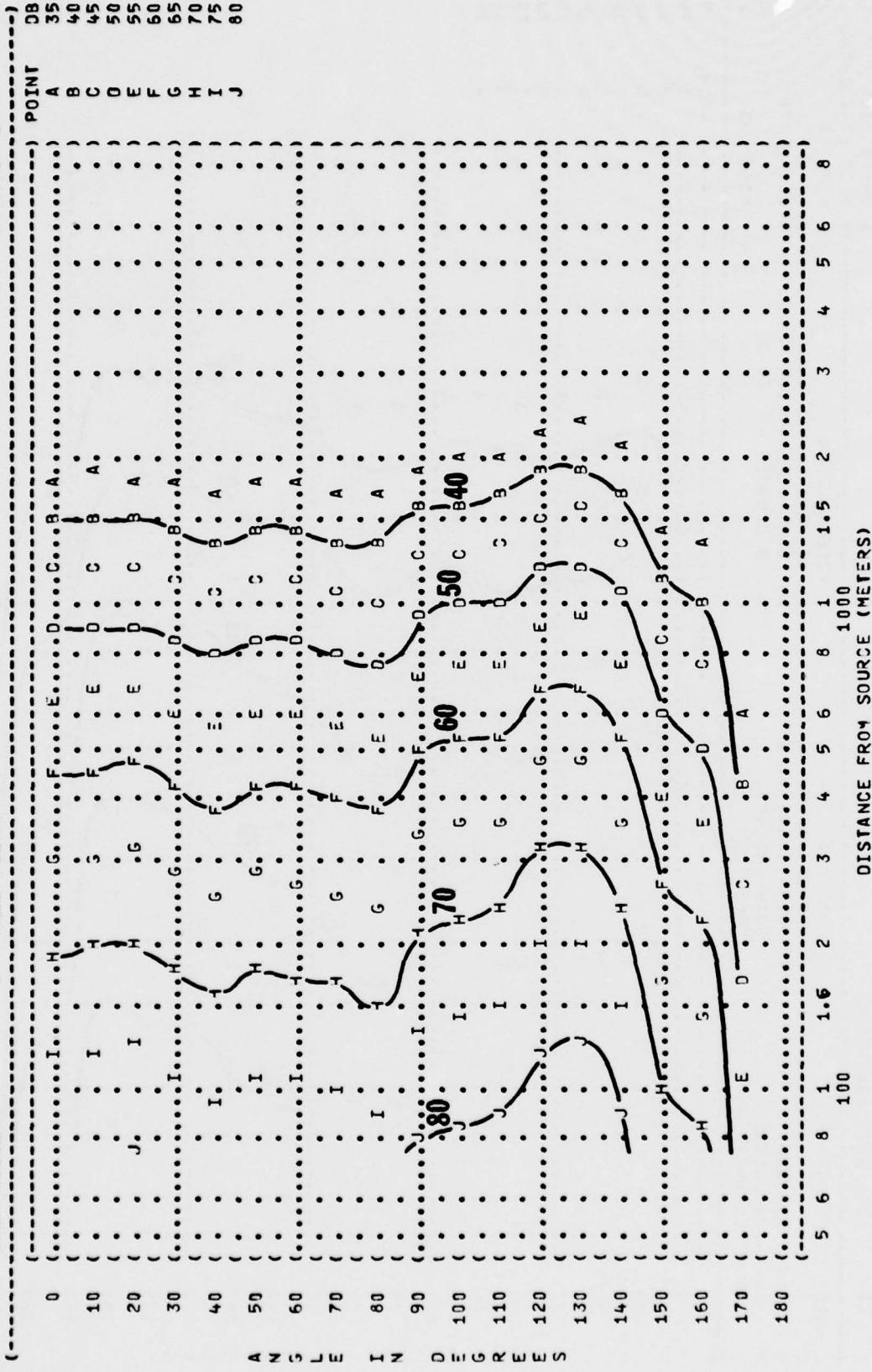


FIGURE: SOUND PRESSURE LEVEL (SPL)
 EQUAL LEVEL CONTOURS
11
 2000 Hz OCTAVE BAND

NOISE SOURCE/SUBJECT:
 T-39A AIRCRAFT
 J60-P-3/A ENGINE
 FAR FIELD NOISE

OPERATION:
 75% RPM POWER
 36.5 IN HG, PT-5
 BOTH ENGINES
 FREE FLOW

IDENTIFICATION:
 OMEGA 1⁴
 TEST 75-002-048
 RUN 02
 25 AUG 76
 PAGE 24



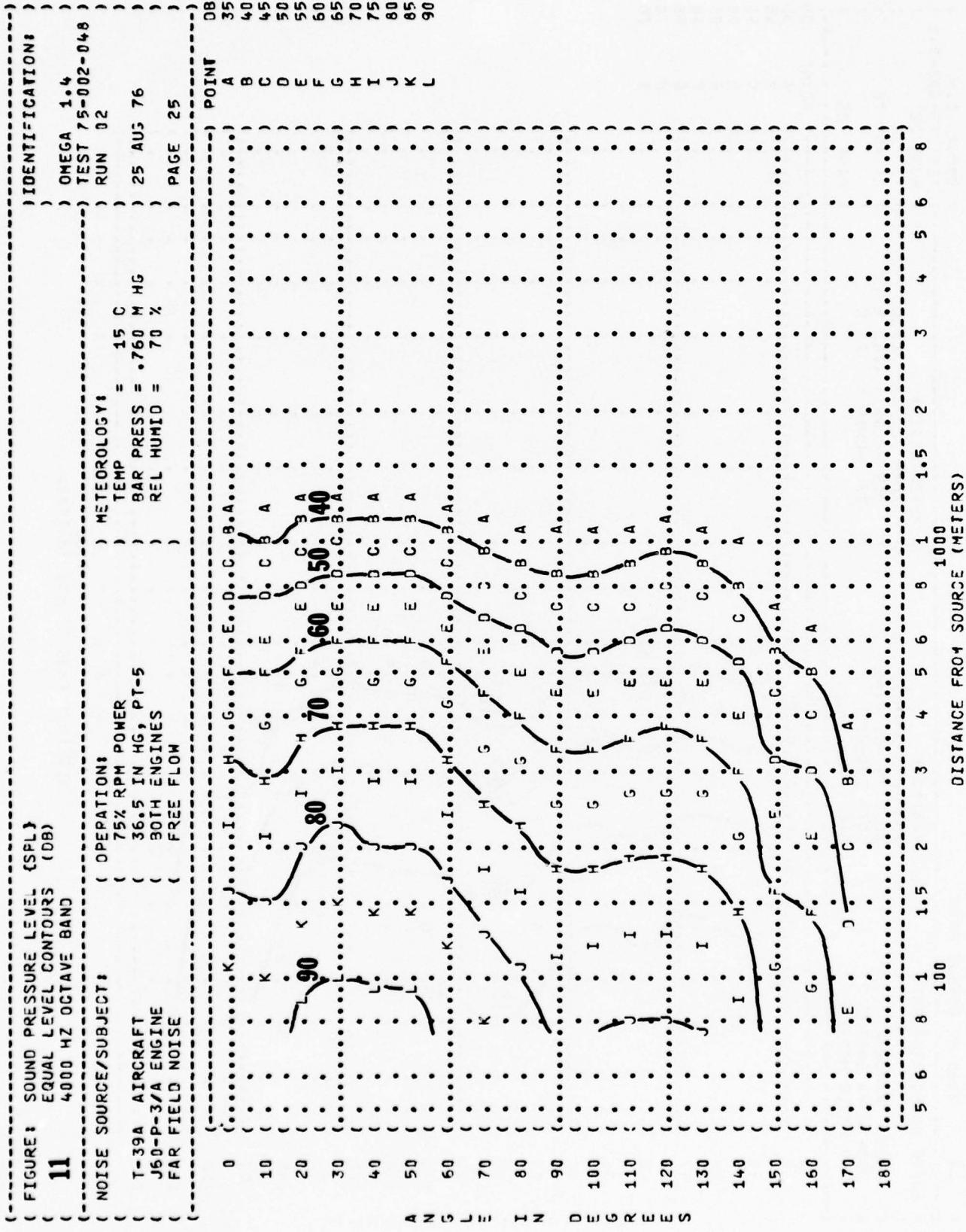


FIGURE: SOUND PRESSURE LEVEL (SPL)
11 EQUAL LEVEL CONTOURS
8000 Hz OCTAVE BAND

NOISE SOURCE/SUBJECT:

T-39A AIRCRAFT
J60-P-3/A ENGINE
FAR FIELD NOISE

OPERATIONS:

75% RPM POWER
36.5 IN HG, PT-5
BOTH ENGINES
FREE FLOW

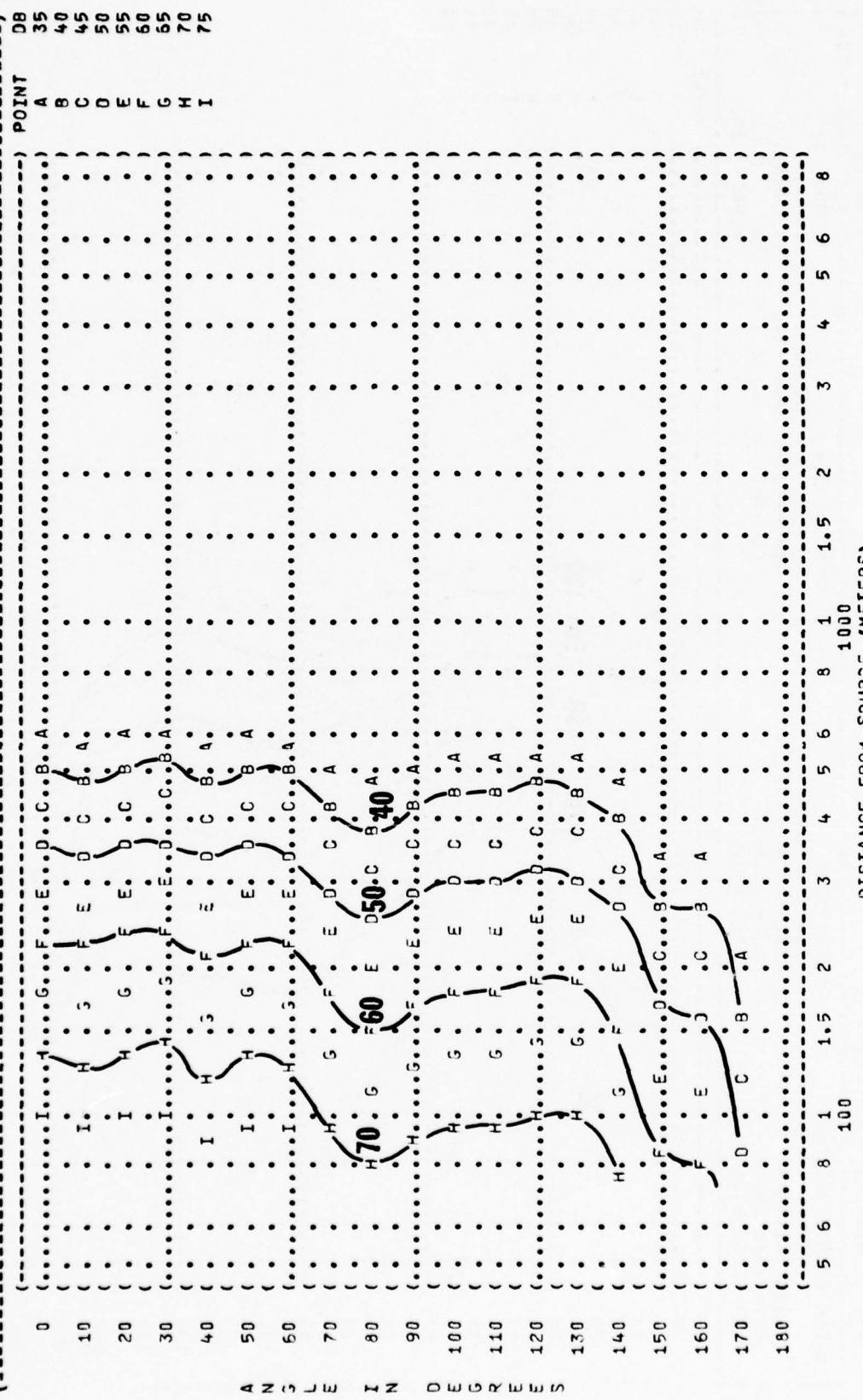
METEOROLOGY:

TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

TEST 75-002-048
RUN 02

PAGE 26

POINT DB



DISTANCE FROM SOURCE (METERS)

5 6 8 10 15 20 30 40 50 60 100 1000

FIGURE: SOUND PRESSURE LEVEL (SPL)
EQUAL LEVEL CONTOURS
31.5 Hz OCTAVE BAND
11

NOISE SOURCE/SUBJECT:

T-39A AIRCRAFT
J60-P-3/A ENGINE
FAR FIELD NOISE

OPERATION:
85% RPM POWER
42.5 IN HG, PT-5
BOTH ENGINES
FREE FLOW

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-048
RUN 03

METEOROLOGY:

TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

PAGE 18

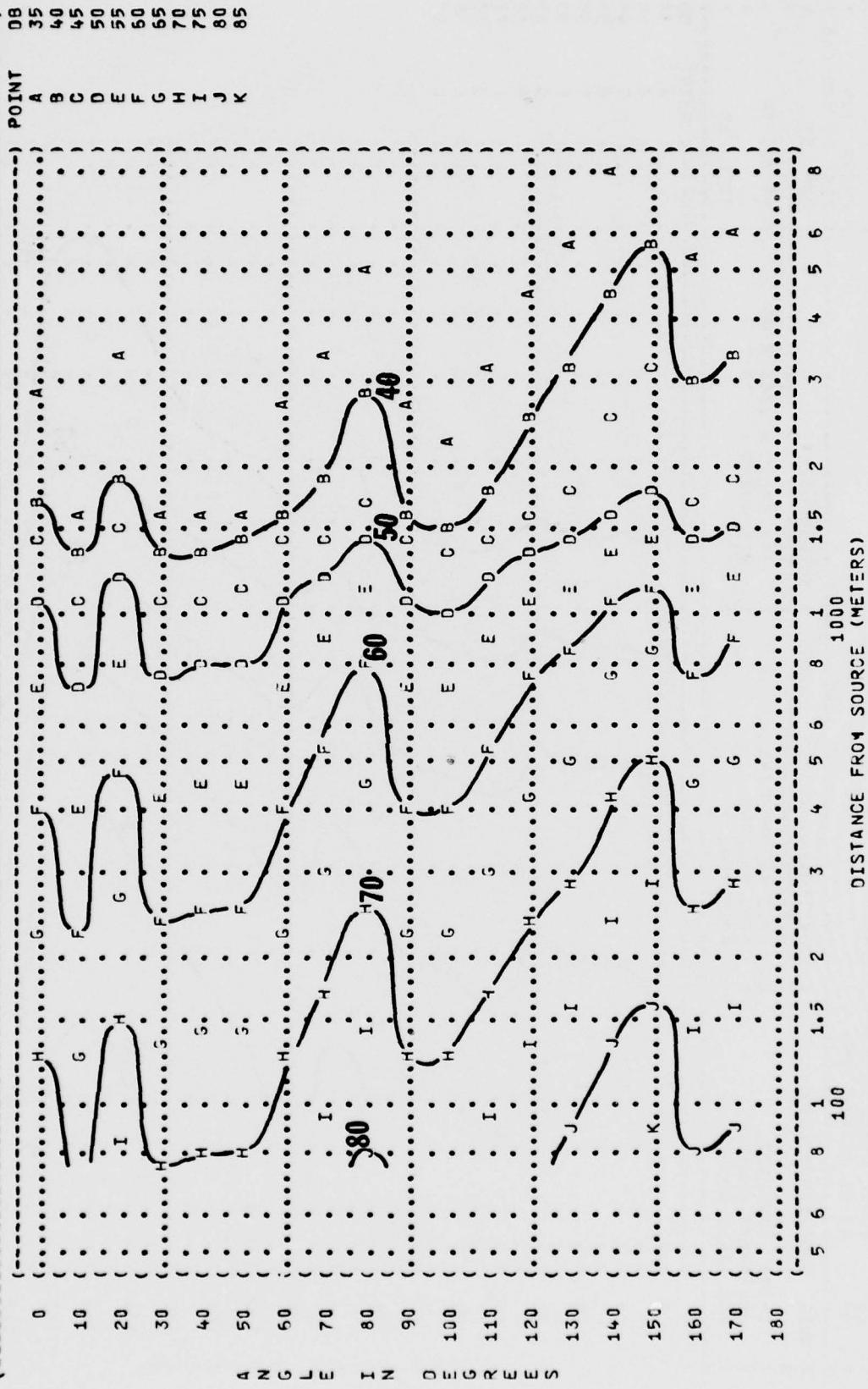


FIGURE 11 SOUND PRESSURE LEVEL (SPL)
EQUAL LEVEL CONTOURS (DB)
63 Hz OCTAVE BAND

NOISE SOURCE/SUBJECT: T-39A AIRCRAFT
J60-P-3/A ENGINE
FAR FIELD NOISE

OPERATION: 85% RPM POWER
42.5 IN HG, PT-5
BOTH ENGINES
FREE FLOW

METEOROLOGY: TEMP = 15 C
BAR PRESS = 760 M HG
REL HUMID = 70 %

TEST 75-002-046
RUN 03
25 AUG 76
PAGE 19

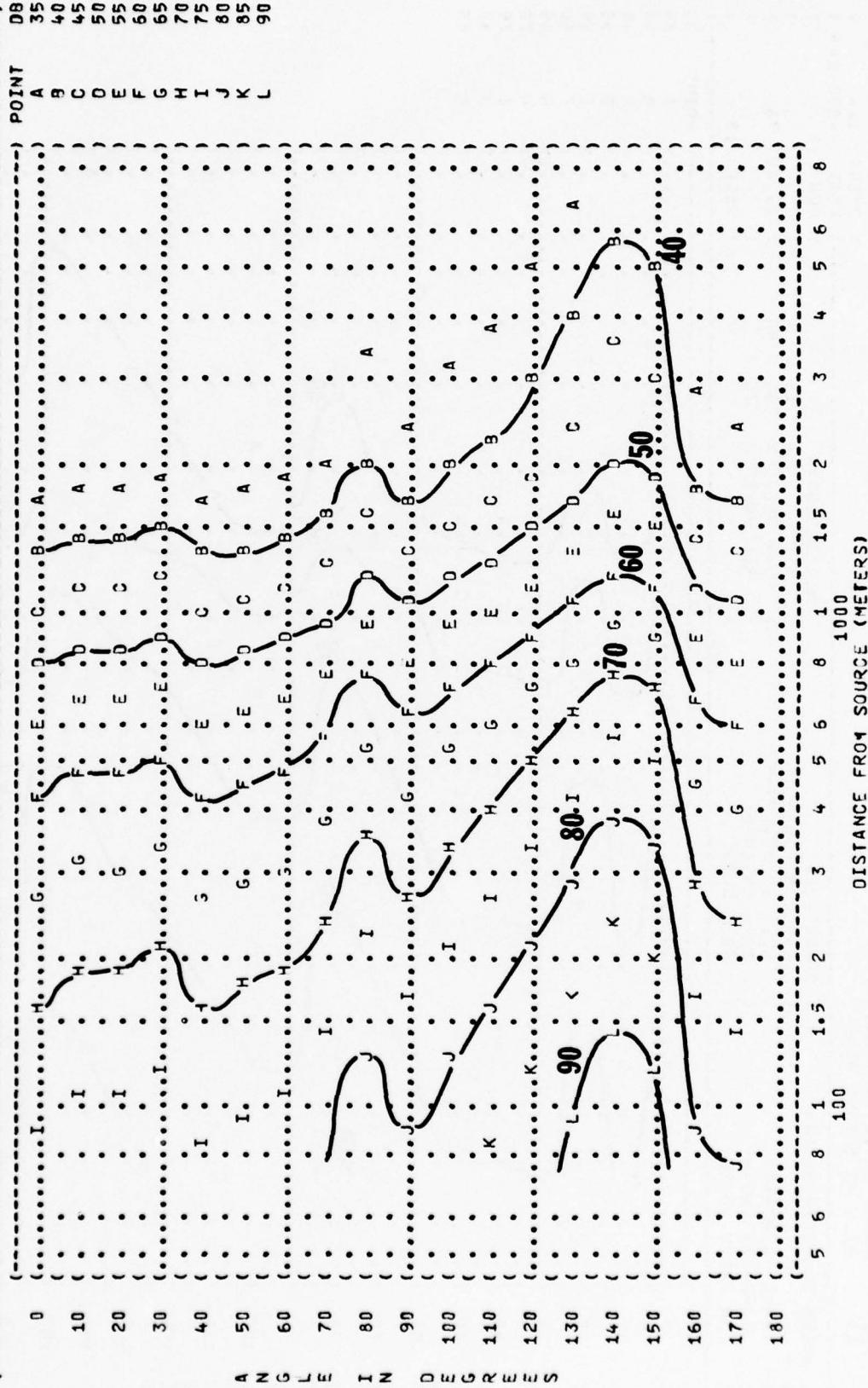
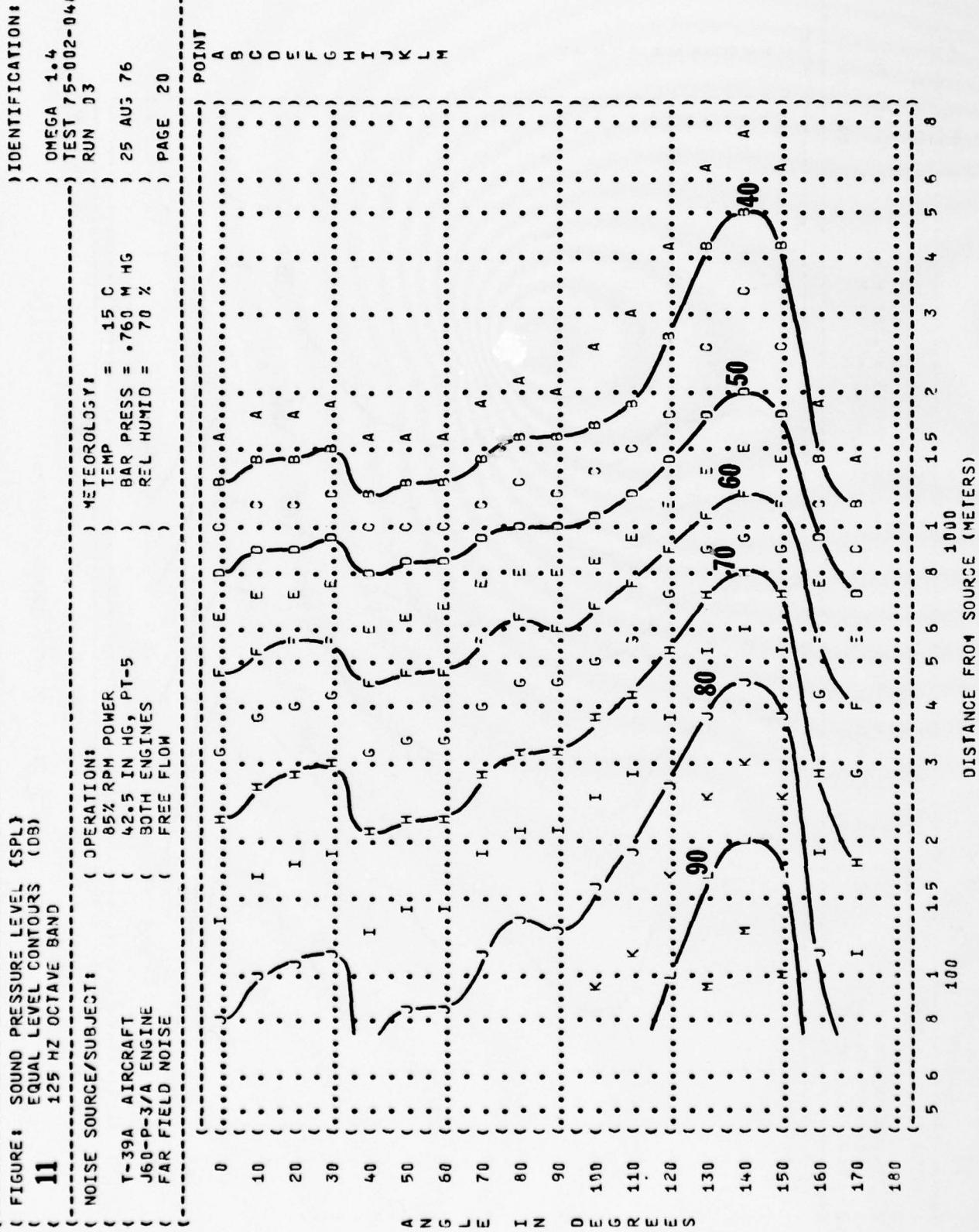


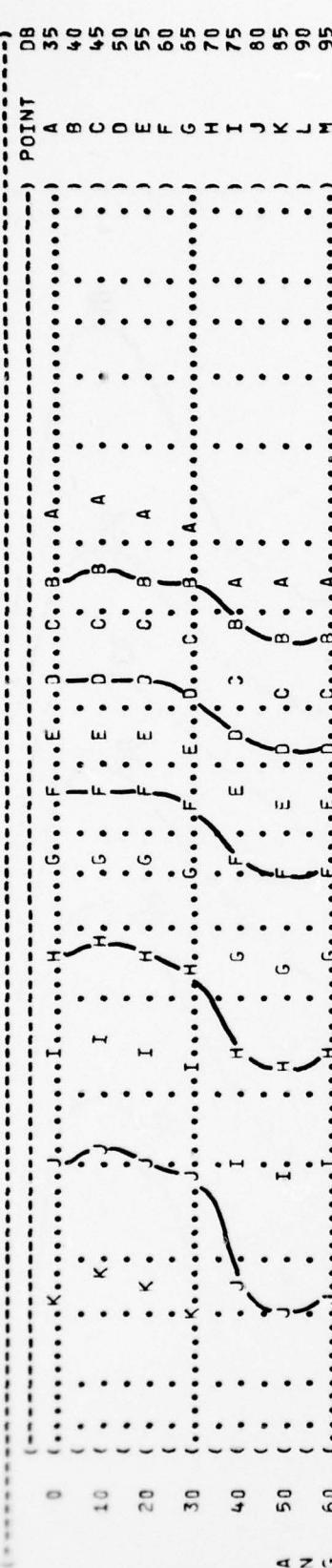
FIGURE: SOUND PRESSURE LEVEL (SPL)
11 125 Hz OCTAVE BAND



SOUND PRESSURE LEVEL (SPL)
LEVEL CONTOURS
250 Hz OCTAVE BAND

NOTE: SOURCE/SUBJECT:

Tn 39A AIRCRAFT
JB 10P-3/A ENGINE
FAIR FIELD NOISE



100 110 120 130 140 150 160 170 180

80

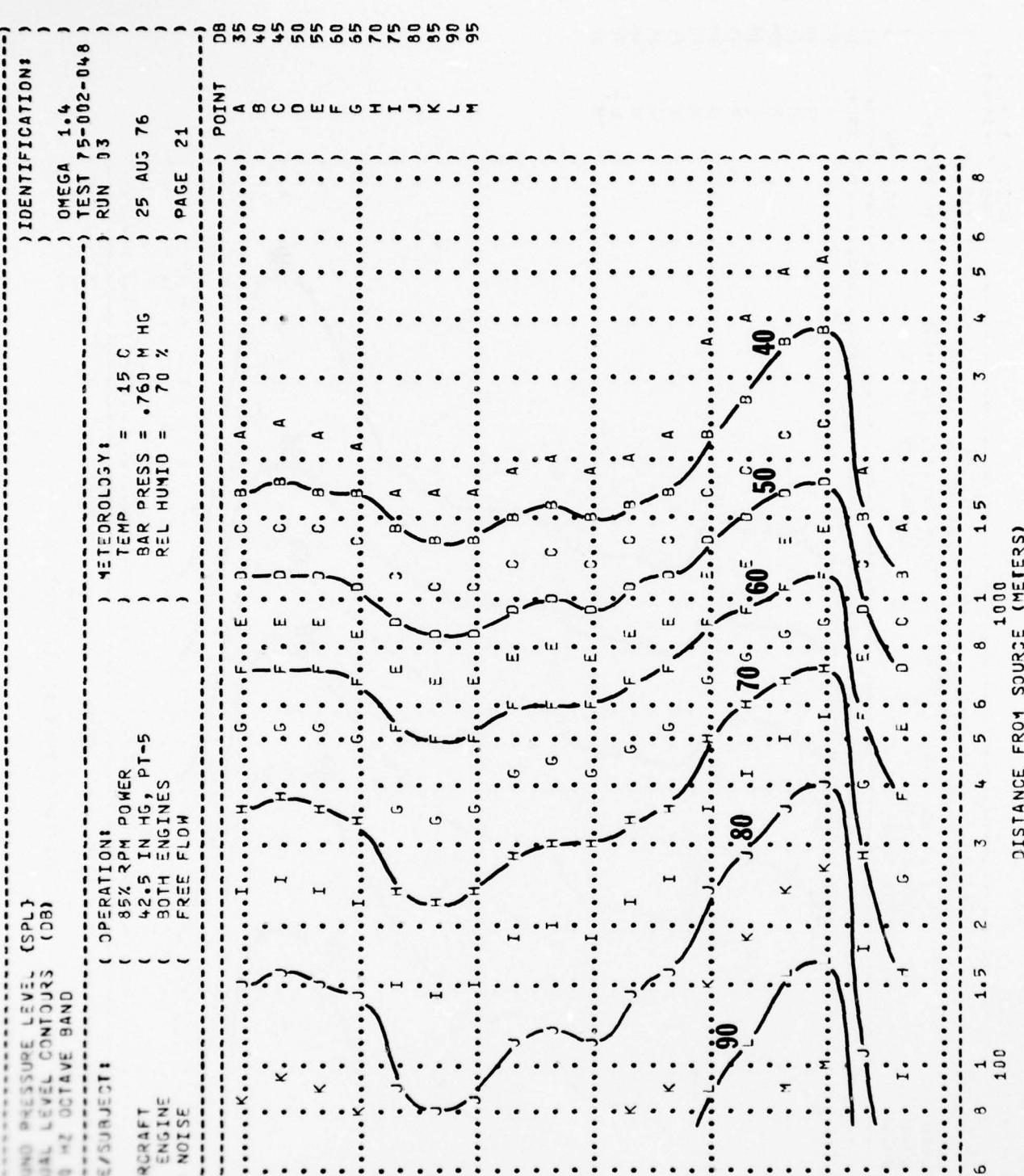


FIGURE 11
SOUND PRESSURE LEVEL [SPL]
EQUAL LEVEL OCTAVE BAND
500 Hz OCTAVE BAND

NOISE SOURCE/SUBJECT:
T-39A AIRCRAFT
J60-P-3/A ENGINE
FAR FIELD NOISE

OPERATION:
85% RPM POWER
42.5 IN HG, PT-5
BOTH ENGINES
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = 760 M HG
REL HUMID = 70 %

TEST 75-002-048
RUN 03
25 AUG 76
PAGE 22

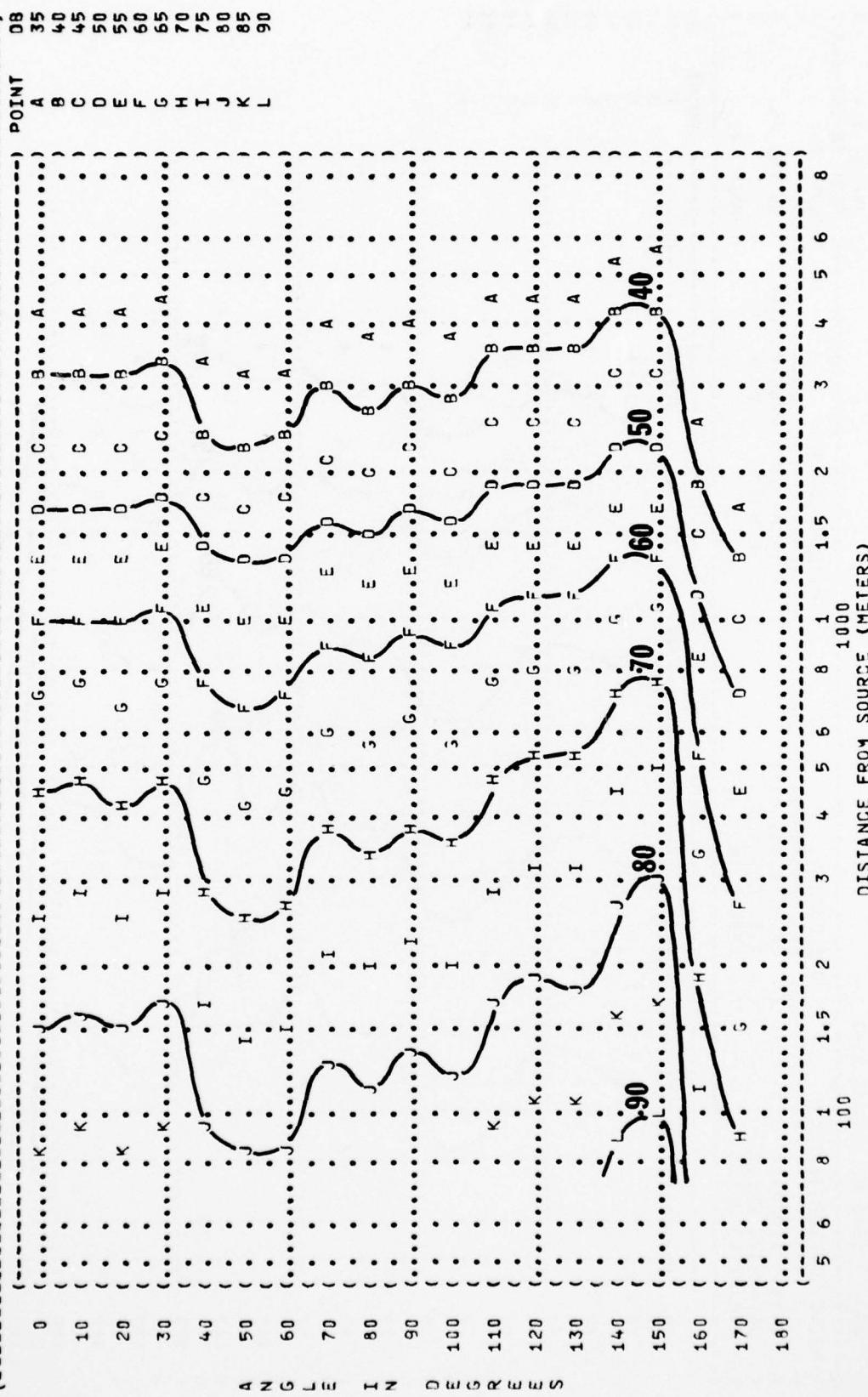
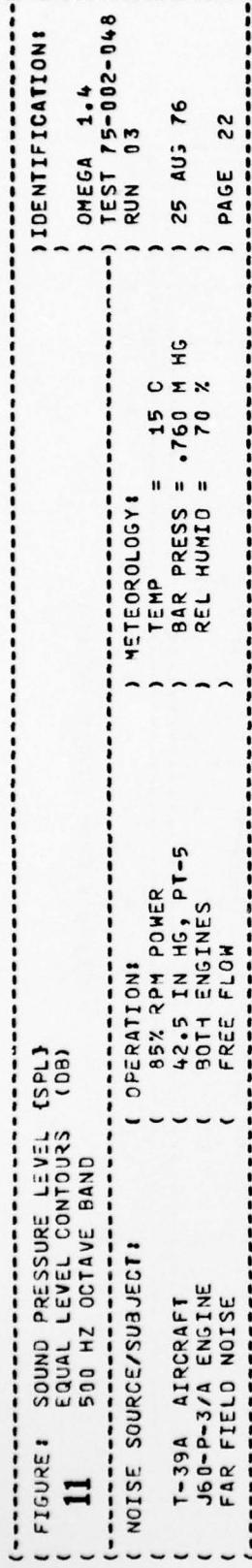


FIGURE: SOUND PRESSURE LEVEL (SPL)
EQUAL LEVEL CONTOURS (DB)
11 1000 Hz OCTAVE BAND

NOISE SOURCE/SUBJECT: **T-39A AIRCRAFT**
J60-P-3/A ENGINE
FAR FIELD NOISE

OPERATION:
85% RPM POWER
42.5 IN HG, PT-5
BOTH ENGINES
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

TEST 75-002-046
RUN 03
25 AUG 76
PAGE 23

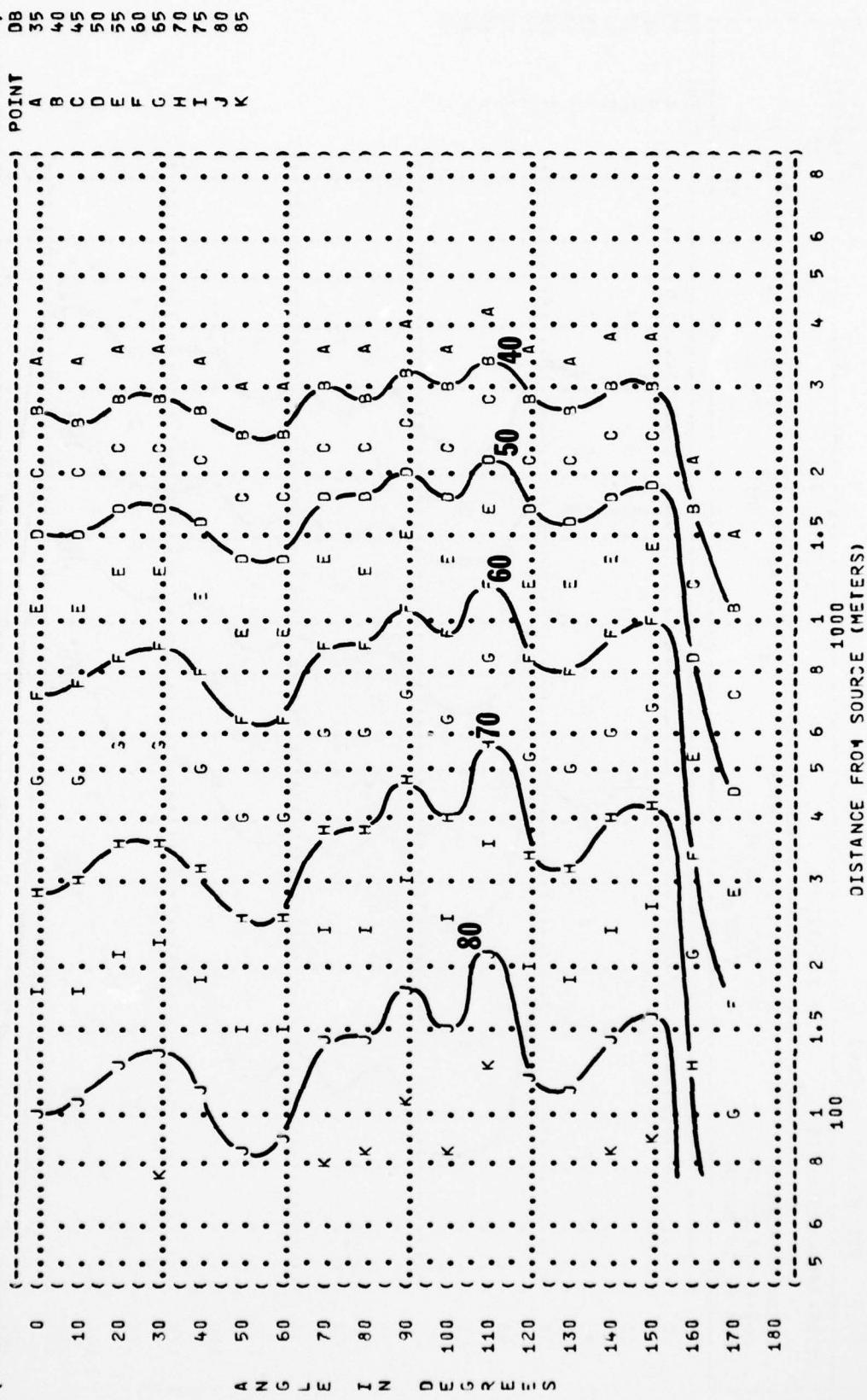


FIGURE: SOUND PRESSURE LEVEL (SPL)
11
 EQUAL LEVEL CONTOURS
 2000 Hz OCTAVE BAND

NOISE SOURCE/SUBJECT:

T-39A AIRCRAFT
 J60-P-3/A ENGINE
 FAR FIELD NOISE

OPERATION:

85% RPM POWER
 42.5 IN HG, PT-5
 BOTH ENGINES
 FREE FLOW

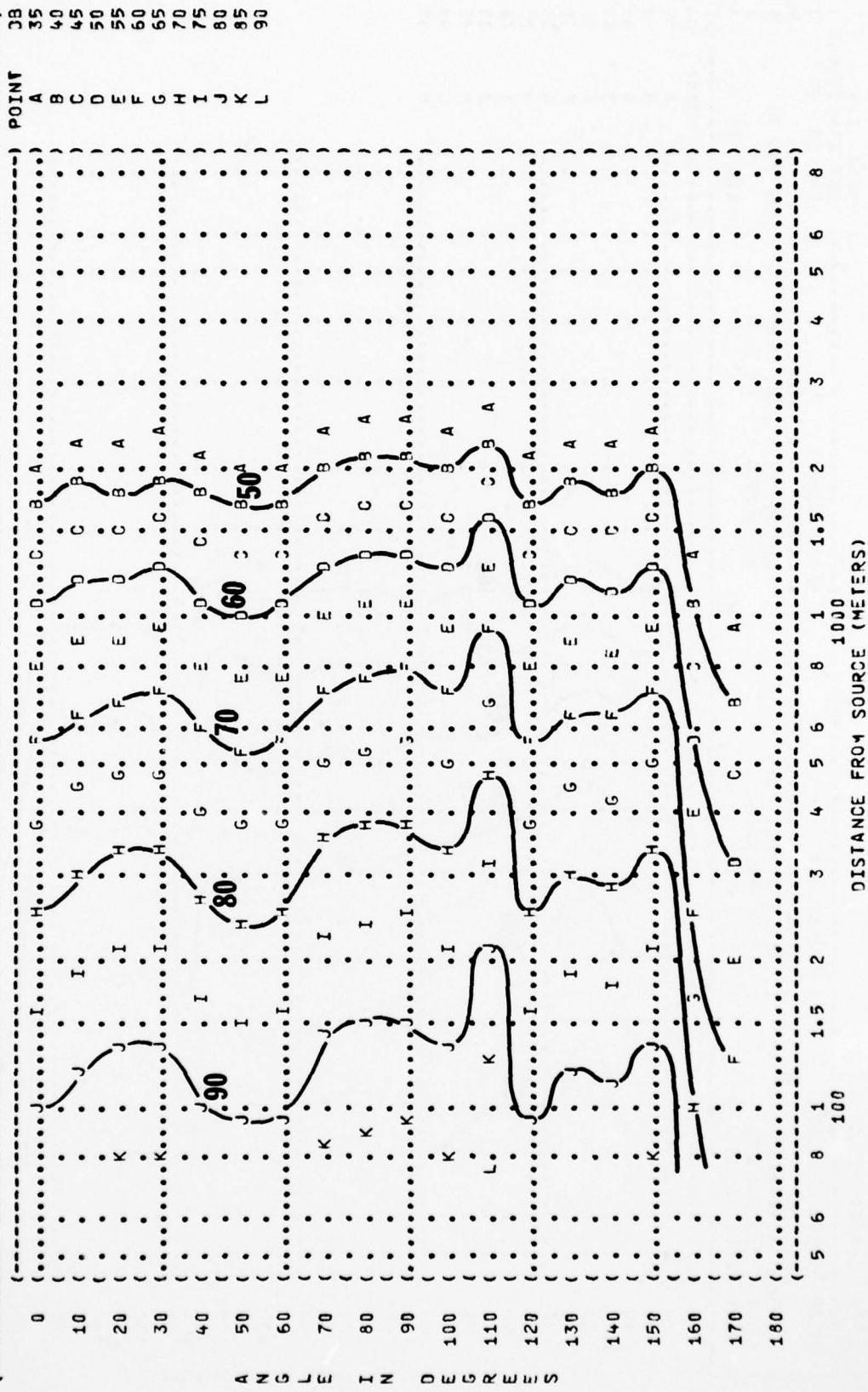
METEOROLOGY:

TEMP = 15 C
 BAR PRESS = .760 M HG
 REL HUMID = 70 %
 FREE FLOW

IDENTIFICATION:

OMEGA 1.4
 TEST 75-002-048
 RUN 03

PAGE 24



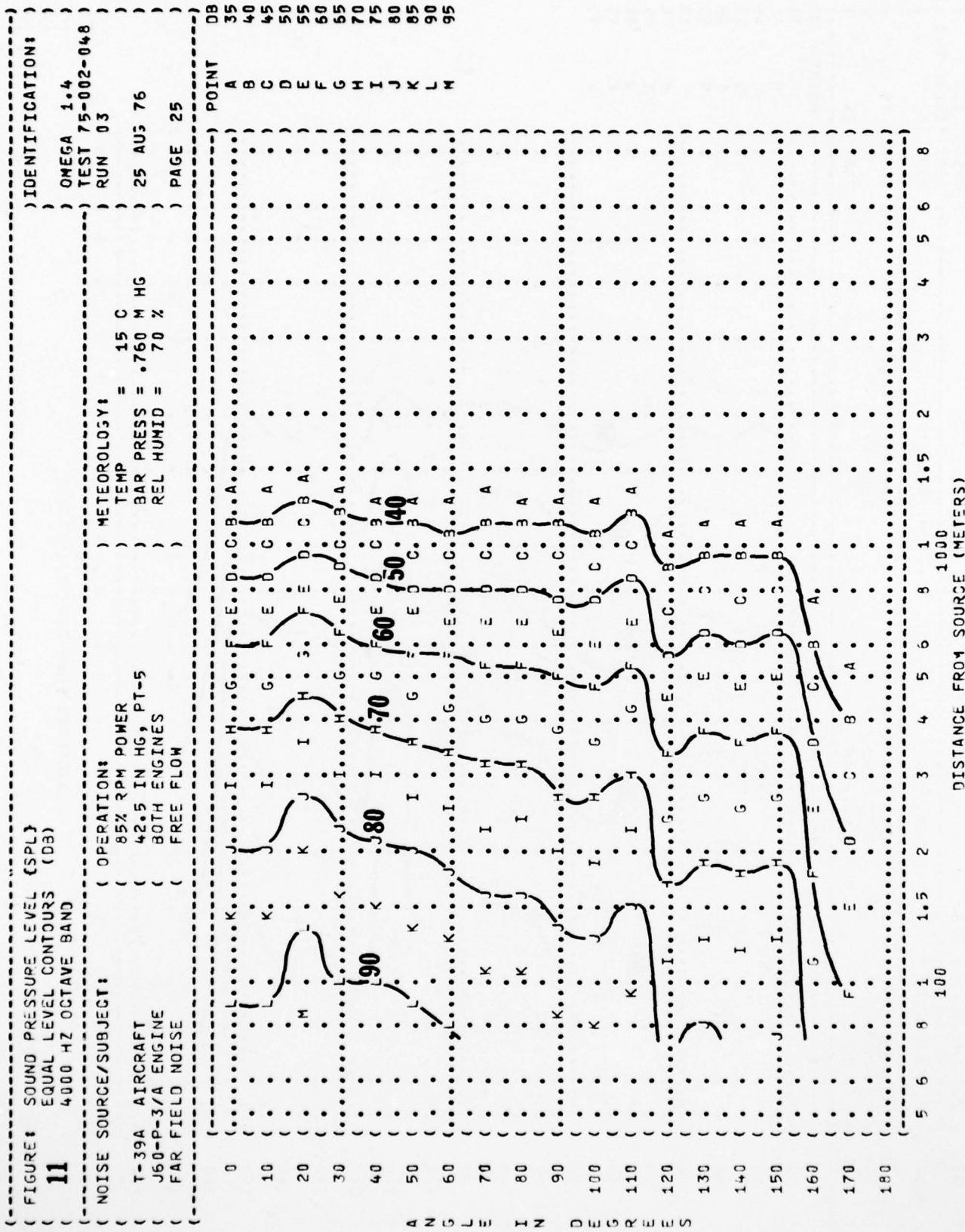


FIGURE 11 SOUND PRESSURE LEVEL (SPL)
EQUAL LEVEL CONTOURS
8000 Hz OCTAVE BAND

T-39A AIRCRAFT
J60-P-3/A ENGINE
FAR FIELD NOISE

NOISE SOURCE/SUBJECT: T-39A AIRCRAFT
OPERATION: 85% RPM POWER
42.5 IN HG, PT-5
BOTH ENGINES
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

TEST 75-002-048
RUN 03

PAGE 26

POINT 08

A 35

B 40

C 45

D 50

E 55

F 60

G 65

H 70

I 75

J 80

K 85

L 90

M 95

N 100

O 105

P 110

Q 115

R 120

S 125

T 130

U 135

V 140

W 145

X 150

Y 155

Z 160

AA 165

AB 170

AC 175

AD 180

AE 185

AF 190

AG 195

AH 200

AI 205

AJ 210

AK 215

AL 220

AM 225

AN 230

AO 235

AP 240

AQ 245

AR 250

AS 255

AT 260

AU 265

AV 270

AW 275

AX 280

AY 285

AZ 290

BA 295

BB 300

BC 305

BD 310

BE 315

BF 320

BG 325

BH 330

BI 335

BK 340

BL 345

BM 350

BN 355

BO 360

BP 365

BQ 370

BR 375

BS 380

BT 385

BU 390

BV 395

BW 400

BY 405

BZ 410

CA 415

CB 420

CC 425

CD 430

CE 435

CF 440

CG 445

CH 450

CI 455

CJ 460

CK 465

CL 470

CM 475

CN 480

CO 485

CP 490

CQ 495

CR 500

CS 505

CT 510

CW 515

BY 520

CA 525

CB 530

CC 535

CD 540

CE 545

CF 550

CG 555

CH 560

CI 565

CJ 570

CK 575

CL 580

CM 585

CN 590

CO 595

CP 600

CQ 605

CR 610

CS 615

CT 620

CW 625

BY 630

CA 635

CB 640

CC 645

CD 650

CE 655

CF 660

CG 665

CH 670

CI 675

CJ 680

CK 685

CL 690

CM 695

CN 700

CO 705

CP 710

CQ 715

CR 720

CS 725

CT 730

CW 735

BY 740

CA 745

CB 750

CC 755

CD 760

CE 765

CF 770

CG 775

CH 780

CI 785

CJ 790

CK 795

CL 800

CM 805

CN 810

CO 815

CP 820

CQ 825

CR 830

CS 835

CT 840

CW 845

BY 850

CA 855

CB 860

CC 865

CD 870

CE 875

CF 880

CG 885

CH 890

CI 895

CJ 900

CK 905

CL 910

CM 915

CN 920

CO 925

CP 930

CQ 935

CR 940

CS 945

CT 950

CW 955

BY 960

CA 965

CB 970

CC 975

CD 980

CE 985

CF 990

CG 995

CH 1000

POINT 08

A 35

B 40

C 45

D 50

E 55

F 60

G 65

H 70

I 75

J 80

K 85

L 90

M 95

N 100

O 105

P 110

Q 115

R 120

S 125

T 130

U 135

V 140

W 145

X 150

Y 155

Z 160

AA 165

AB 170

AC 175

AD 180

AE 185

AF 190

AG 195

AH 200

AI 205

AJ 210

AK 215

AL 220

AM 225

AN 230

AO 235

AP 240

AQ 245

AR 250

AS 255

AT 260

AU 265

AV 270

AW 275

AX 280

AY 285

AZ 290

BA 295

BB 300

BC 305

BD 310

BE 315

BF 320

BG 325

BH 330

BI 335

BK 340

BL 345

BM 350

BN 355

BO 360

BP 365

BQ 370

BR 375

BS 380

BT 385

BU 390

BV 395

BW 400

BY 405

BZ 410

CA 415

CB 420

CC 425

CD 430

CE 435

CF 440

CG 445

CH 450

CI 455

CJ 460

CK 465

CL 470

CM 475

CN 480

CO 485

CP 490

CQ 495

CR 500

CS 505

CT 510

FIGURE: SOUND PRESSURE LEVEL (SPL)
11 EQUAL LEVEL CONTOURS
 31.5 Hz OCTAVE BAND

NOISE SOURCE/SUBJECT:

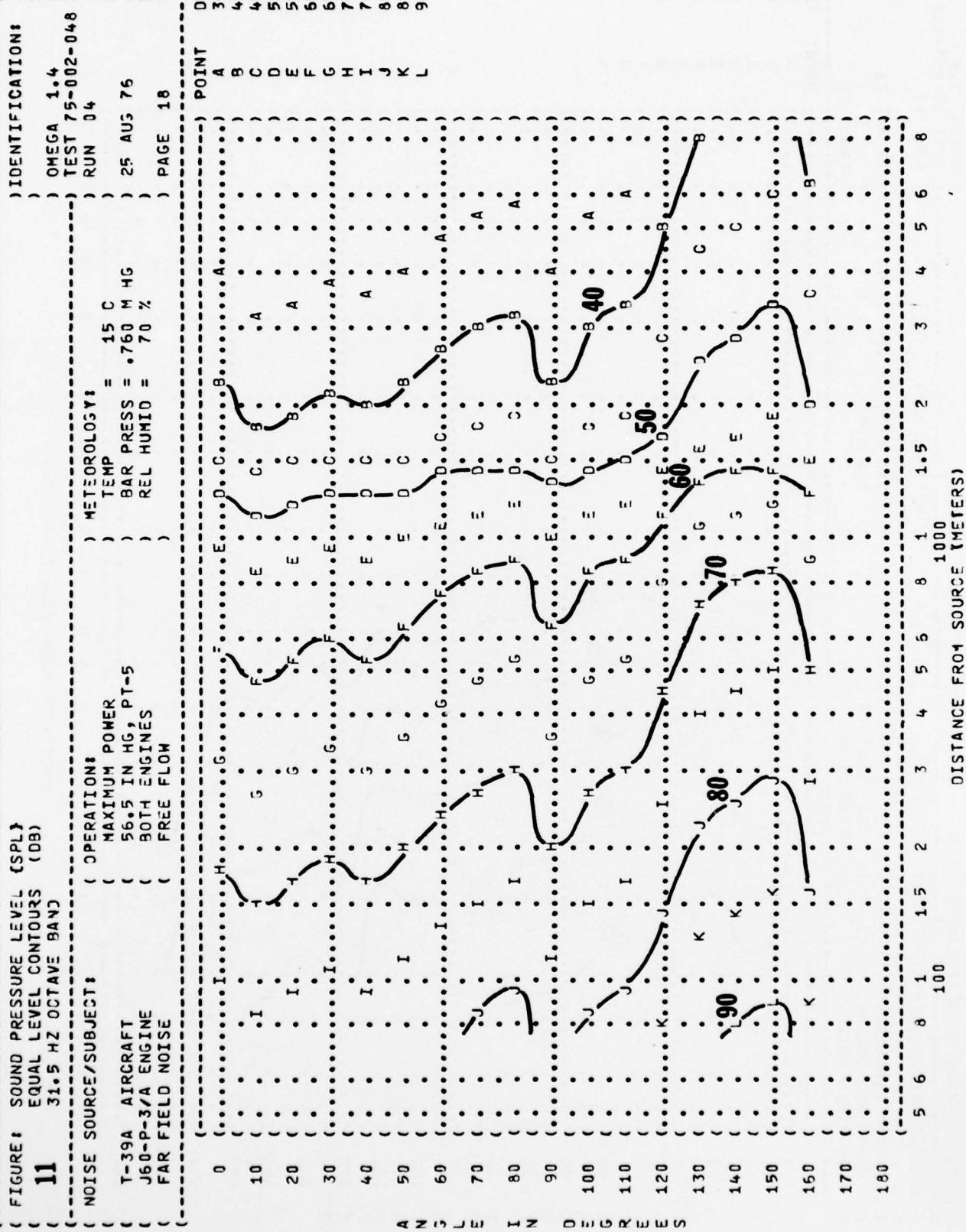
T-39A AIRCRAFT
 J60-P-3/A ENGINE
 FAR FIELD NOISE

OPERATION:

MAXIMUM POWER
 56.5 IN HG, PT-5
 BOTH ENGINES
 FREE FLOW

METEOROLOGY:

TEMP = 15 C
 BAR PRESS = .760 M HG
 REL HUMID = 70 %
 TEST 75-002-048
 RUN 04
 PAGE 18



DISTANCE FROM SOURCE (METERS)

FIGURE: SOUND PRESSURE LEVEL (SPL)
EQUAL LEVEL CONTOURS (DB)
11
63 Hz OCTAVE BAND

NOISE SOURCE/SUBJECT:

T-39A AIRCRAFT
J60-P-3/A ENGINE
FAR FIELD NOISE

OPERATION:

MAXIMUM POWER

56.5 IN HG, PT-5

BOTH ENGINES

FREE FLOW

POINT DB

A 35

B 40

C 45

D 50

E 55

F 60

G 65

H 70

I 75

J 80

K 85

L 90

M 95

IDENTIFICATION:

OMEGA 1.4

TEST 75-002-048

RUN 04

METEOROLOGY:

TEMP = 15 C

BAR PRESS = .760 HG

REL HUMID = 70 %

PAGE 19

POINT

DB

A

B

C

D

E

F

G

H

I

J

K

L

M

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P

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FIGURE : SOUND PRESSURE LEVEL [SPL]
11 EQUAL LEVEL CONTOURS (DB)
 125 Hz OCTAVE BAND

NOISE SOURCE/SUBJECT:

T-39A AIRCRAFT
 J60-P-3/A ENGINE
 FAR FIELD NOISE

OPERATION:

MAXIMUM POWER
 56.5 IN HG, PT-5
 BOTH ENGINES
 FREE FLOW

IDENTIFICATION:

OMEGA 1.4

TEST 75-002-048

RUN 34

METEOROLOGY:

TEMP = 15 C
 BAR PRESS = .760 M HG
 REL HUMID = 70 %

PAGE 20

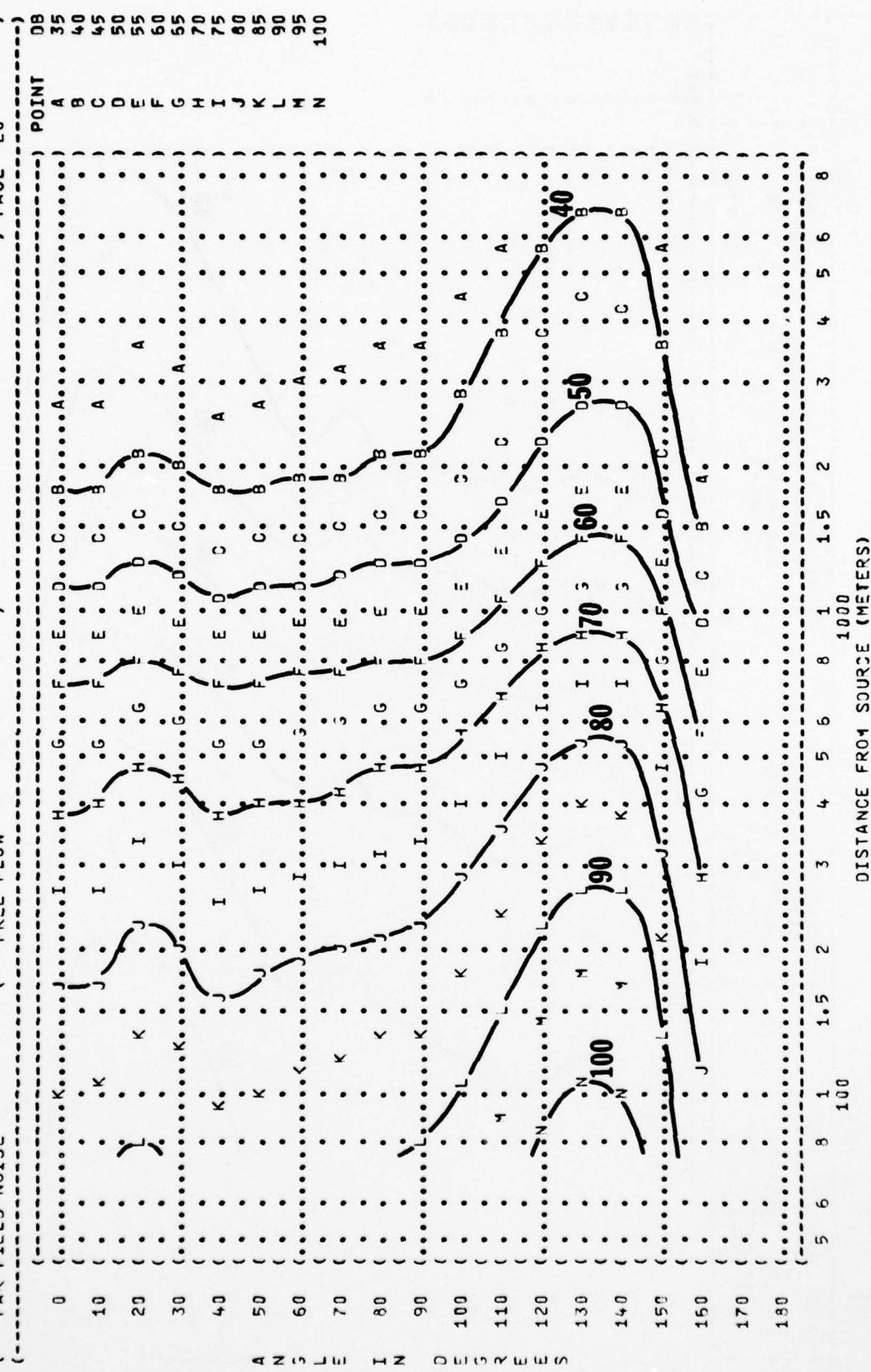


FIGURE: SOUND PRESSURE LEVEL (CPL)
 11 EQUAL LEVEL CONTOURS (DB)
 250 Hz OCTAVE BAND

NOISE SOURCE/SUBJECT:

T-39A AIRCRAFT
 J60-P-3/A ENGINE
 FAR FIELD NOISE

OPERATION: MAXIMUM POWER
 56.5 IN HG, PT-5
 BOTH ENGINES
 FREE FLOW

IDENTIFICATION:

OMEGA 1.4
 TEST 75-002-048
 RUN 04

25 AU; 76

PAGE 21

METEOROLOGY:

TEMP = 15 C
 BAR PRESS = .760 M HG
 REL HUMID = 70 %

PAGE 21

POINT DB
 A 35
 B 40
 C 45
 D 50
 E 55
 F 60
 G 65
 H 70
 I 75
 J 80
 K 85
 L 90
 M 95
 N 100

A N L E I N D E G R E E S

DISTANCE FROM SOURCE (METERS)

5 6 8 100 1.5 2 3 4 5 6 8 1 1.5 2 3 4 5 6 8

FIGURE: SOUND PRESSURE LEVEL (SPL)
11 EQUAL LEVEL CONTOURS (DB)
 500 Hz OCTAVE BAND

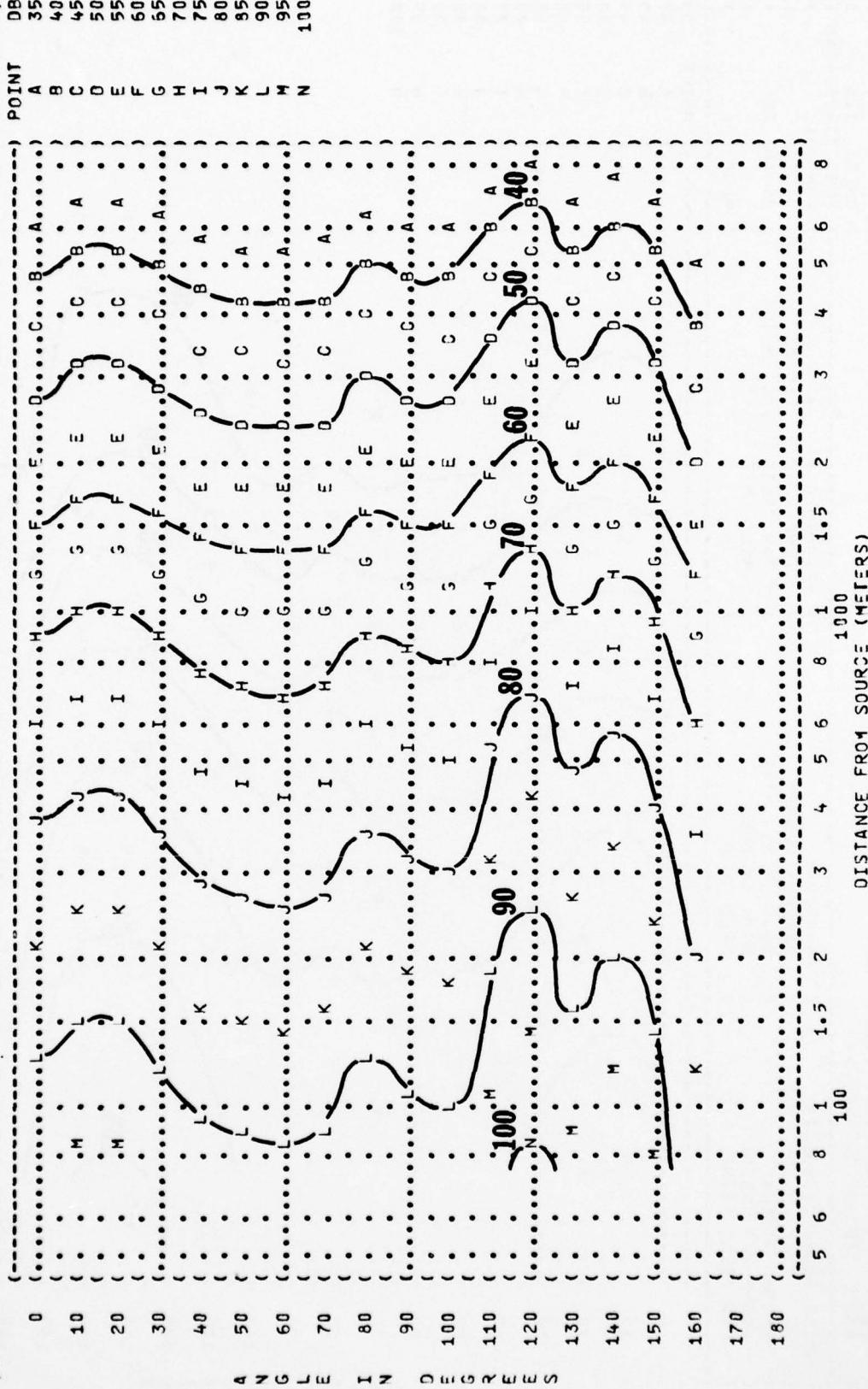
NOISE SOURCE/SUBJECT:

T-39A AIRCRAFT
 J60-P-3/A ENGINE
 FAR FIELD NOISE

OPERATION:
 MAXIMUM POWER
 56.5 IN HG, PT-5
 BOTH ENGINES
 FREE FLOW

METEOROLOGY:
 TEMP = 15 C
 BAR PRESS = .760 M HG
 REL HUMID = 70 %

TEST 75-002-048
 RUN 04
 PAGE 22



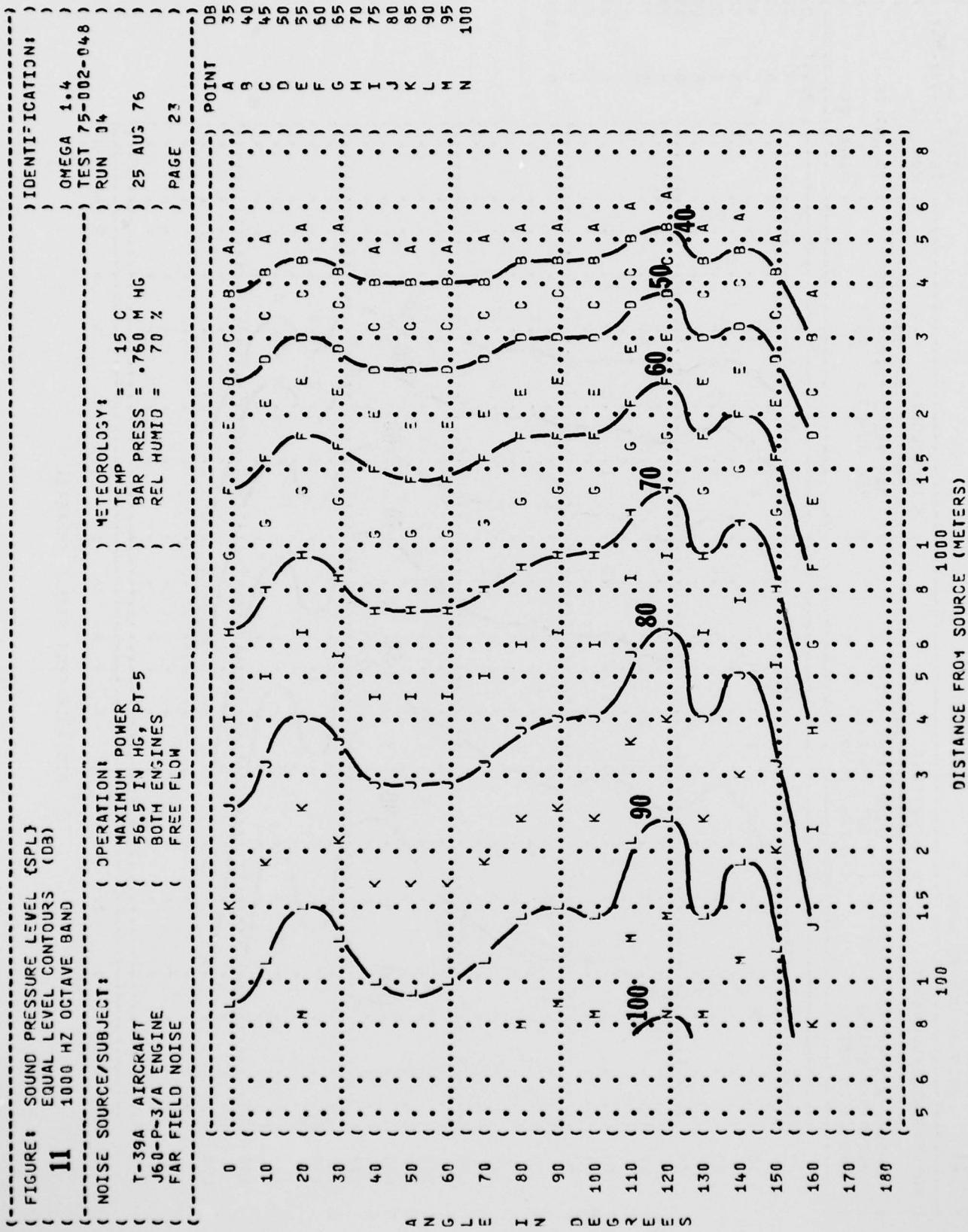


FIGURE: SOUND PRESSURE LEVEL (SPL)
11
 EQUAL LEVEL CONTOURS
 4000 HZ OCTAVE BAND

NOISE SOURCE/SUBJECT:
 T-39A AIRCRAFT
 J60-P-3/A ENGINE
 FAR FIELD NOISE

OPERATION:
 MAXIMUM POWER
 56.5 IN HS, PT-5
 BOTH ENGINES
 FREE FLOW

IDENTIFICATION:

OMEGA 1.4

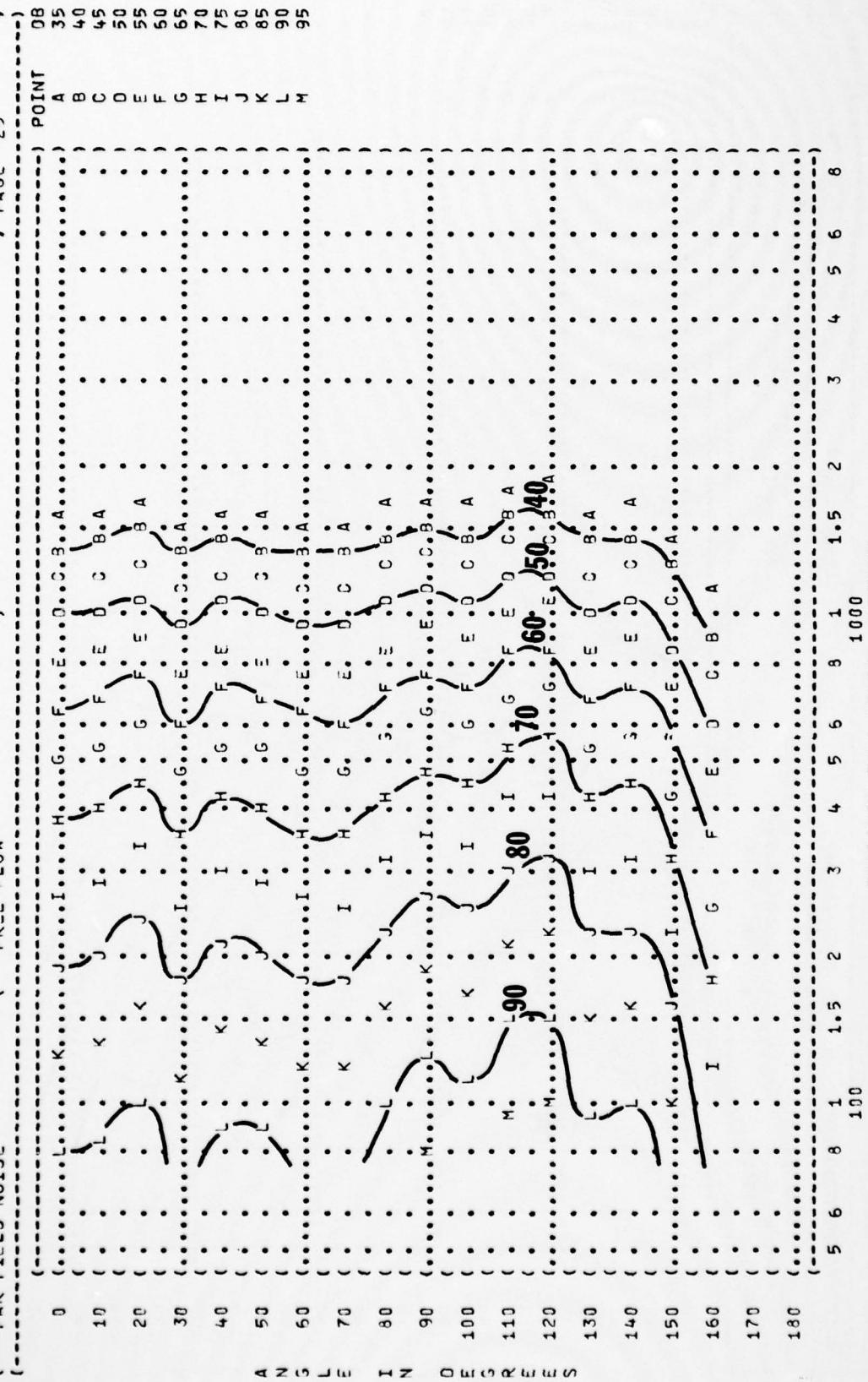
TEST 75-002-048
 RUN 04

TEMP = 15 C
 BAR PRESS = .760 M HG
 REL HUMID = 70 %

PAGE 25

METEOROLOGY:

POINT DB
 A 35
 B 40
 C 45
 D 50
 E 55
 F 60
 G 65
 H 70
 I 75
 J 80
 K 85
 L 90
 M 95



AD-A048 937 AEROSPACE MEDICAL RESEARCH LAB WRIGHT-PATTERSON AFB OHIO F/G 20/1
USAF BIOENVIRONMENTAL NOISE DATA HANDBOOK. VOLUME 97. T-39 AIRC--ETC(U)
MAY 77 R G POWELL, N A FARINACCI

UNCLASSIFIED

AMRL-TR-75-50-VOL-97

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